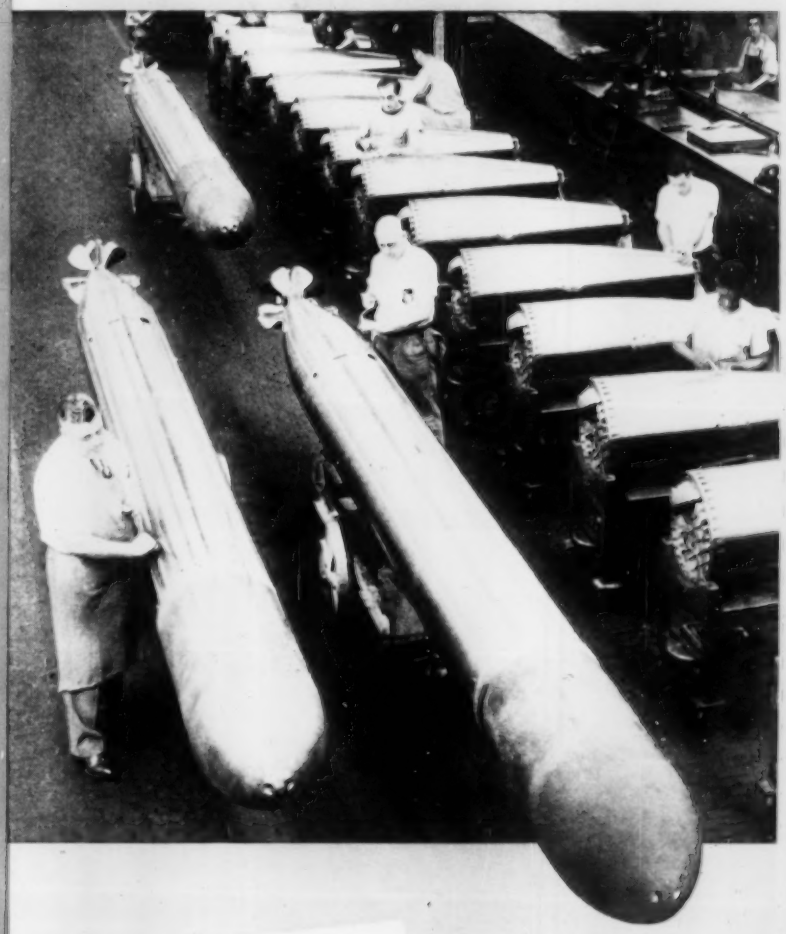
JANUARY 22, 1951

STEEL

The Weekly Magazine of Metalworking

ENGINEERING



Conversion ... WHEN ... HOW

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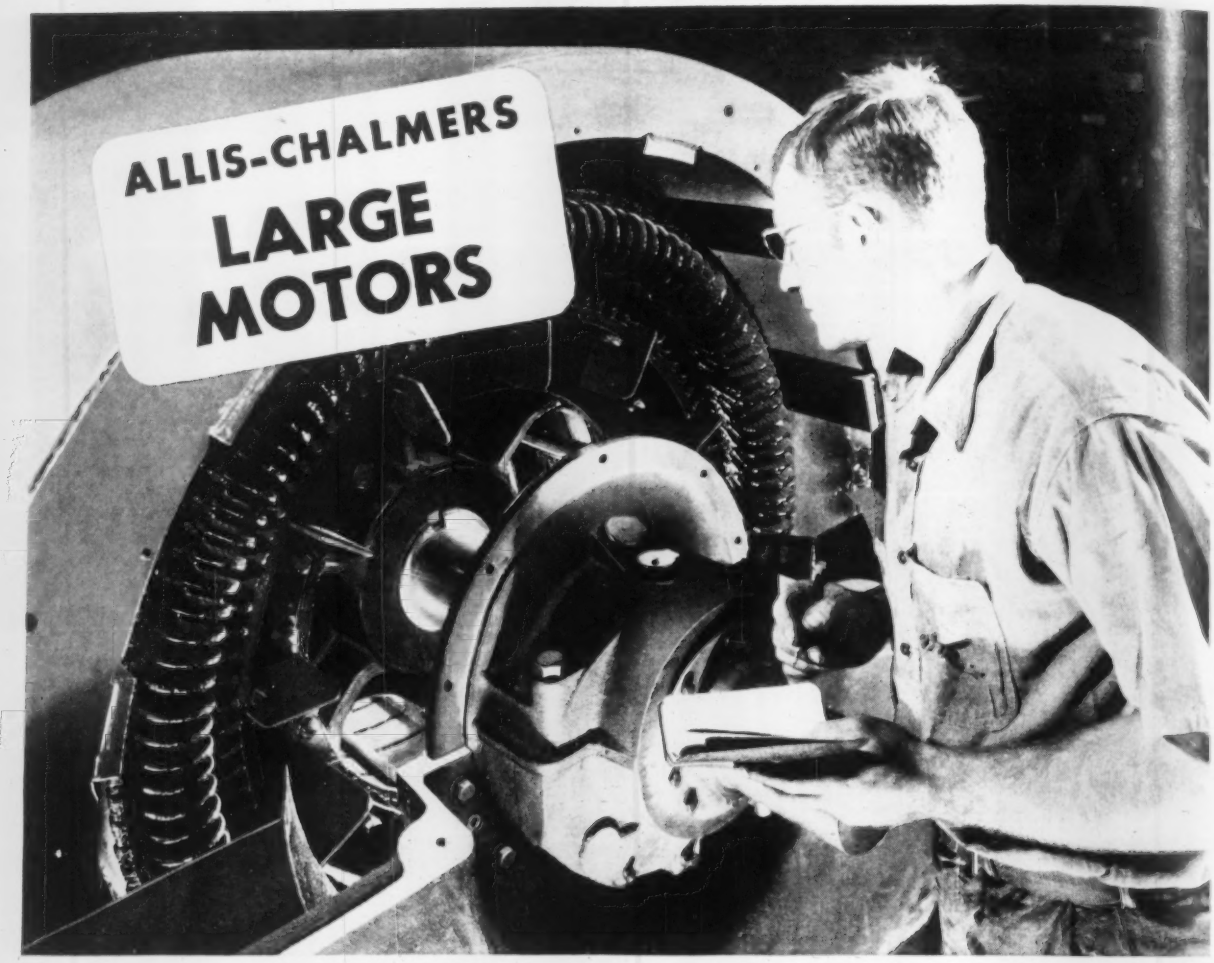

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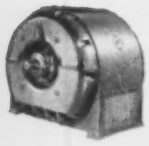

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A-3251

ALLIS-CHALMERS

STEEL
The Weekly Magazine of Metalworking
VOL. 128 NO. 4 JANUARY 22, 1951

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Next Week . . . **Statistical Quality Control Cuts Inspection Costs $100,000 . . . Automatic Plating Meets Stiff Defense Production Standards . . . Toothed Rubber Belt Assures Split-Second Timing . . . Modern Coal Preparation Cuts Inland's Pig Iron Costs**

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Behind the Scenes...

A Cover Gets Born

This week's cover had its conception about ten days ago when Managing Editor Walt Campbell returned from Washington convinced that the Defense Department was at last getting into gear on war orders. That knowledge, plus talks with metalworking men and the tone of the copy coming across his desk from regional editors, convinced him and the rest of the staff that now would be the time to help you with the when and how of conversion to war production.

At a staff meeting, the subject of conversion was discussed and examined. Broad outlines of the proposed story were drawn. Associate Editor John Morgan was assigned to write the article. Walt alerted regional editors to gather conversion information in their areas.

"The subject is a natural for the cover," he was saying as we slipped into one of the "cover" meetings held every Friday. "What's the best way to treat it?" Staff Members Morgan, Vance Bell and Ed Birkner were seated around him in his office.

"How about an art job," suggested Vance, "showing ploughshares being made into swords again? Reverse the 'swords to ploughshares' thing."

"Would that be clear, specific enough?" asked John. "How many people in industry would recognize a ploughshare instantly?"

Bandied about was the question of how many city slickers who read STEEL wouldn't recognize a ploughshare when they see one. The consensus finally was that the overwhelming majority would know a ploughshare but that the idea was still too symbolic, too removed from actual problems to be effective enough.

"What about before-and-after photographs?" said Ed. "We could show the peacetime assembly line in one, the war production in the other."

That was agreed to but then the question arose about what photographs to pick: Automobiles vs. tanks; commercial planes vs. jet fighters; appliances vs. guns? Appliances were finally picked because that industry has been hardest hit thus far by conversion problems. Calls were then made to learn what appliance manufacturers made during World War II and what they would be producing for defense now.

When Ed found pictures that suited him, he gave them to the Art Department. Artist Robin Allen went to work on the cover layout and had one that was approved by the editors the following Monday. The art job went to the engravers and was ready for the printing presses by last Wednesday.

Data for the story began coming in last Tuesday. The final draft of the article was finished by Thursday. The story appears today on page 43.

Without Obligation

An engineer we know makes no bones about how he dislikes television.

"Waste of time. Ruins children's education. I wouldn't have one in the house," he says.

The other evening while reading a good book he was interrupted by the doorbell. Two men stood at the door with a large carton. It was a Muntz TV set. Somebody had phoned the television sales office that our engineer wanted a free home trial.

Grounded

Sign of the times: A Cleveland department store is now calling its elevator operators "pilots."

Puzzle Corner

In the problem of Jan. 8 about exterminating politicians and saving statesmen, M. S. Bailey of Machine Products Corp. writes: "I would ordinarily not trouble to solve the matter because the type of statesmen we have today is not worth saving. I would let them go together with the politicians. But for the sake of their families, perhaps I would do something."

Mr. Bailey, Paul C. Smedley of Ohio Crankshaft Co., David M. Romsey Jr. of Republic Steel Corp. and T. S. Bean of Barber & Ross Co. would arrange the men this way in a circle: (Let S equal statesman and P equal politician) SSSSPPPPPSSPSSSPSPPSSPPPSPPSSP. Start counting with the first statesman in the group of four statesmen.

Two volumes of a book are placed in their proper order on a bookshelf. Each book has a $\frac{1}{8}$-inch cover, and all the pages in each volume measure $1\frac{1}{2}$ inches thick, in total. How far does a bookworm travel if it starts from page 1, volume 1 and eats in a straight line to the last page of volume 2?

Shrdlu

(Metalworking Outlook—page 35)

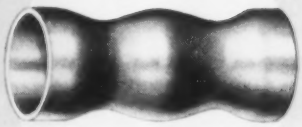
FLANGING

EXPANDING

Severe Fabrication?

UPSETTING

SPINNING



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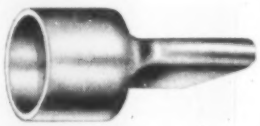

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LETTERS
TO THE EDITORS

Sitting on Wood Chips

In the Dec. 25th issue we noticed an item on page 40 in connection with "New Cushion and Back Seat Design," especially as it relates to the "wood panels are made by exploding wood chips, etc." We would like to know the name of the people producing these compressed wood items.

Louis H. Morin, Consulting Engineer
Gries Reproducer Corp., New York, N. Y.

• *Presdwood backing used in the seats has been on the market for some time. It is made by Masonite Corp., 111 W. Washington St., Chicago, Ill.*

We Thank You

I am reading the Jan. 1, 1951, issue of your magazine STEEL. This contains a lot of valuable and interesting information. You fellows are to be com-

mended on the fine job you did on this book. I propose to read it cover to cover. Keep up the good work.

E. P. Stahl
Newark, N. Y.

Eastern Steel Plant

In your Dec. 25th issue you state that another large steel plant is to be located on the Delaware river below Philadelphia. This is in addition to the plant of the U. S. Steel Corp. at Morrisville. We are very much interested in steel mills in the East on account of our Philadelphia plant. Can you tell us who will erect this plant?

G. A. Sagendorph, President
Penn Metal Co. Inc., Boston, Mass.

• *Plant referred to will be built by National Steel Corp., as noted in* STEEL, *Jan. 8, 1951, page 25. The 2200 acres purchased at Paulsboro, N. J., are for a reported integrated steel mill. Company headquarters: 2800 Grant Bldg., Pittsburgh 19, Pa.*

Cousins: Alnico, Carboloy

In response to a question as to who manufactures magnetic steel of the Alnico type (Letters to the Editors, STEEL, Dec. 11, 1950, page 8), we note that you have included our company as well as General Electric Co., Schenectady, N. Y.

This is to advise you that General Electric does not supply Alnico, but that this entire manufacture was turned over to Carboloy Co. Inc., as of Jan. 1, 1950. In other words, Carboloy, as an affiliate of General Electric, is now handling the entire manufacture of Alnico for GE.

E. C. Howell, Merchandising Manager
Carboloy Co. Inc., Detroit, Mich.

The Metalworking Outlook

Hot Potato—End-Use Steel Curbs

Expect no real end-use limitation orders on steel for a while. One reason: Auto builders are doing a good selling job in persuading NPA that they will be cutting back production more than 20 per cent in the first quarter. They and steel producers say that nonferrous shortages are more responsible for industrial output choke-points than steel scarcities. The UAW supports the auto industry plea for no end-use controls on steel, and that union swings a lot of weight in Washington. To soften the howl from other steel consumers hard pressed for the metal, NPA may come up with a window-dressing order.

NPA Studies Machine Tools

NPA has another hot potato in machine tools. Detroit auto builders are placing big contracts for tooling (p. 57). Cries of "nonessential" are already being heard by the NPA from some tool buyers who claim they're getting slow delivery on their orders. Auto makers say their contracts can be postponed to make way for war tools, but they believe that such tools have not been ordered yet in volume. Watch for machine tool controls next.

Nickel Ruckus Develops

A squabble is brewing between U. S. government groups and International Nickel Co. of Canada. A Senate subcommittee attributes the nickel shortage in part to Inco policies. Bureau of Mines is pushing research work at Albany, Oreg., to augment supplies. Expect a limitation order soon covering end uses of chrome-nickel stainless steels. Such an order will not affect the use of straight-chrome stainless grades.

DO Gripes Mount

Grumblings are increasing among steel consumers about the DO system. Sign that NPA is hearing them: It's tinkering some more with its setup (p. 49). Steel users admit that DO's help, but they complain that the orders get them steel weeks, even months late.

Wage-Price Freeze Due

A full wage-price freeze will be greeted by much of industry with something like relief. Nobody wants controls, but at least across-the-board curbs are better than the one-shoe-off-one-shoe-on situation that has existed thus far. Refresh your memory on OPA experiences. They'll be coming in handy.

Mr. Lewis Does It Again

Boosts granted to coal workers are one straw in the wind that there may either be a wage freeze as of some recent date or that rollbacks will be selective. John L. Lewis and the coal operators are too experienced to risk a coal settlement that would be nullified by wage rollbacks. They are too knowing in the ways of Washington not to have had assurances of how pay curbs

Production-Engineering News—p. 71 The Market Outlook—p. 132

will apply to them. The 370,000 soft coal miners get a 20-cent hourly wage increase, which probably will be passed along to the consumer.

Manpower Controls Likely

Get manpower problems solved as soon as possible because worker allocations are not far off. For the time being, the U. S. will "suggest" to employees and employers what may be done to relieve shortages, but these voluntary arrangements never last long. Mobilization Boss C. E. Wilson will direct the show. NSRB is plugging for a policy to insure the training of young scientists, engineers and others with special skills. Its chances for adoption are good.

Coming: Balanced Defense Program

Distortions in the defense production program are due to be remedied. Thus far, most emphasis has been on ground vehicles and to a lesser extent on aircraft. That will be changed as the government shapes up a plan to build 100,000 aircraft a year. But output in the near future will be less than 50,000 planes a year, and actual facilities ready for immediate use will have only a 50,000-a-year capacity. The Air Force wants 100 or 105 groups, not 84 as originally planned. An administration bill calling for a new $2 billion Navy ship building program has also been introduced in the House.

Signs of the Times

Talk persists that a third steel plant will be built along the Delaware river, possibly near Bristol, Pa. . . . A merchant blast furnace will be built in the Pittsburgh area . . . Negotiations are definitely on for a merger of Allegheny Ludlum and Pittsburgh Steel . . . Westinghouse plans to spend $500,000 at its Trafford, Pa., foundry to produce nodular iron under a license agreement with International Nickel Co. . . . Watch for action to boost production of abrasives.

What Industry Is Doing

What you can do about conversion is outlined on p. 43 . . . Offices where you can get defense production information are listed on p. 44. A summary of what some companies can make for defense (p. 45) may help you convert . . . Preventive maintenance saves equipment (p. 46) . . . Lone Star Steel gets a government loan to expand (p. 47) . . . Purchased scrap consumption may hit 35 million gross tons by 1953 (p. 48) . . . Control orders increase (p. 49) . . . The President isn't worried about inflation (p. 50) . . . Sterling nations' dollar reserves increase, but prospects for production expansion are bleak (p. 53) . . . U. S. production is picking up after the yearend slackening (p. 61).

Congress Wakes Up

A hopeful development in the debates on national policy is the increasing vigor with which members of Congress are criticizing aspects of President Truman's program which they do not like. Some persons deplore this criticism on the score that it displays to enemies and to the world at large a condition of disunity that is harmful to our interest.

Whatever risk we take in this respect is more than offset by the advantages of free debate. During and following World War II our government administrations made some of the worst blunders in the entire history of the United States. These were traceable in large measure to the willingness of the public and of Congress to accord the chief executive too free a hand in formulating national policy.

We made a terrible mistake when we abandoned the precedent that a president should not serve more than two terms. We made even more serious mistakes in encouraging the president to assume responsibilities which under the constitution should have been shared with Congress.

In view of this background of presidential error, it is wholesome to see prominent Democrats and Republicans ignoring party affiliations to criticize administration policies that they believe to be unsound. It was particularly gratifying to note the almost universal adverse reaction to the President's budget message. Mr. Truman foolishly invited trouble by three inexcusable ineptitudes: 1. He loaded the budget with thinly-disguised proposals for appropriations for his pet socialistic projects on the pretext that they are essential to defense. 2. He virtually ignored the important factor of economy in non-essential government spending. 3. He brushed off the really serious problem of inflation with perfunctory lip service.

We doubt whether any presidential message during the past several decades has provoked such unanimity of adverse criticism by spokesmen of all shades of political belief as did Mr. Truman's unrealistic budget message. Fortunately this is not entirely a gang-up on Mr. Truman's shortcomings. In reality it is a long overdue awakening to the fact that we cannot have good government if we permit the executive branch to usurp too many of the powers and responsibilities which the founders of our nation intended to be vested in the legislative and judicial branches.

PRIORITY FOR SCRAP: Meeting in convention in New York last week, members of the Institute of Scrap Iron & Steel raised their sights to the demands that will confront their important industry during the next few years.

Here are some facts they pondered: Consumption of purchased scrap in 1950 was just under 30 million tons—a new record. Right now consumption is running at an annual rate of more than 32.5 million tons. By the end of 1952 steelmaking facilities will have been expanded to the point where ingot output could be as high as 115 million tons annually. To make this production possible, the scrap industry should try to help meet a consumption of 35 million gross tons of purchased scrap in 1953.

This is a tremendous challenge. It is quite likely that we will again have salvage campaigns and will call upon all sorts of expedients to increase the flow of scrap. These emergency measures are helpful up to a certain point, but main reliance for providing an adequate supply of scrap must be placed upon the regular dealers and collectors.

That is why in the days ahead the various government agencies—in exercising controls on

(OVER)

prices, wages, allocations, etc.—should be extremely careful that they do not unwittingly do anything that will make the scrap industry's problems more difficult than need be. Iron and steel scrap deserves high priority in governmental appreciation and understanding. —p. 48

* * *

HOW MANY CARS IN '51? Numerous authorities have gone out on a limb and ventured estimates of the number of automobiles and trucks that will be turned out in 1951. Several weeks ago the Automobile Manufacturers Association polled some of these forecasters and discovered that their guesses on assemblies of non-military vehicles in 1951 ranged from a low of 2,450,000 to a high of 7,400,000 units. After considering all entries, AMA came up with the conclusion that the collective guess of the guessers is that 3,395,000 cars and 908,000 trucks will be turned out this year. This is a total of 4,303,000.

President C. E. Wilson of General Motors has come forth with his own estimate. He believes assemblies in 1951 will total around 6,000,000. This would be a reduction of about 27 per cent from the record-breaking output of 1950. In the first three weeks of 1951 automobile assemblies were running about 12 per cent behind those in the comparable weeks of 1950.

—p. 57

* * *

A WAY TO SAVE MONEY: Constant attention to little things sometimes pays handsome dividends in metalworking operations. As one goes through a plant and notices the streams of cutting fluids being fed to the points where tools meet the work, he naturally assumes that the fluid is performing its mission satisfactorily. This, however, could be a false assumption. Perhaps the fluid is not as clean as it should be. Possibly it is not being directed to the proper spot or in sufficient volume.

The difference between haphazard and proper methods of applying cutting fluids to machining operations is important in costs. Attention to these details can result in increases in tool life of as much as 100 per cent. Other dividends are improved surface finish, greater accuracy, reduction or elimination of steam and smoke and the reduction of operator complaints.

In many metalworking plants a thorough check of cutting fluid application probably would result in worthwhile savings. —p. 78

TRAINING IS A "MUST": During the ordeal of conversion from peacetime to wartime production many employers will meet difficult problems in trying to hold together an adequate force of skilled workers. Already manufacturers are juggling hours of work, number of shifts and other details in order to retain as many reliable employees as possible in the face of curtailed activity.

Everything that management can do in this direction will fall short of providing enough manpower when war production gets into full swing. Industry again will have to rely to a considerable extent upon "irregular" employees —retired craftsmen, rejects from the armed services, and women.

This prospect calls for extraordinary attention to the problem of training. In some industrial centers trainer personnel is organizing to exchange experience on today's abnormal training problems. Appropriate training is a "must" under the forthcoming challenge. —p. 75

* * *

PLAN FOR CONVERSION: Representatives of government and industry who have been studying the timetable of mobilization believe that by March the effects of the transition from a peacetime to a wartime production basis will be felt by most companies.

This means that executives in the metalworking industry who have not already done so should be looking ahead to the problems of conversion. These problems vary according to the product. Some plants can shift from peacetime to wartime status with little or no change in the type of product. At the other extreme are those who eventually may have to discontinue what they are doing now and tool up for an entirely new product. For the great majority, conversion will be only partial in extent.

There are many things that companies can do to ease the shock of transition. One of the most important is to be sure that the proper agencies of government and important primary contractors know the kind of work your plant is capable of handling. —p. 43

E. L. Shaner

EDITOR-IN-CHIEF

STEEL
A PENTON PUBLICATION

Conversion: Set for the Jump?

You may not yet be much troubled about mobilization but now is the time to start thinking at least about the problem. Everyone will be affected by spring

IN PITTSBURGH, many small and medium-sized metalworking companies are cutting back operations 15 to 25 per cent because of materials scarcities. In Detroit, some auto parts suppliers are getting orders for 35 to 40 per cent fewer components. All over the country industry is beginning to feel the mobilization pinch. What to do?

Now is the time to think at least about conversion, although actual action may be weeks away. The metalworking consensus is: The conversion bite will be felt by everyone by March. Cutbacks in nonessential civilian production are inevitable this spring. You can meet the situation by following one or several of these lines:

Least Resistance—Trim your working force and production to the limit of what materials you can buy or substitutes you can find and of what orders you can get. Even that course probably will require you to switch to some essential civilian products.

And essential civilian products will become progressively rarer. Military spending for fiscal 1952 (for the year ending June 30, 1952) will be at least $41.4 billion, nearly double fiscal 1951 spending. Contract obligational authority of $32.5 billion requested in the current budget means that military spending will be even higher in fiscal 1953 when the money for the contracts will have to be allotted. Even now there's no set definition of essential civilian products, although you can relax if you make something contributing to health, sanitation, food processing or distribution.

A Little More—If you're not content just to take mobilization's punch, what can be done? First step in finding military business is to get your firm listed in the Department of Defense's Industrial Mobilization Register. To do this, communicate with the production planning office nearest you (see the list on p. 44). You furnish information about your facilities and the kind of work you can do, and have your plant inspected. Then your firm name goes into the register for consideration both with prime contracting and subcontracting.

Better to understand the purpose and process of getting your name on the register, read the Munitions Board's booklet, "An Introduction to Planning for Emergency Production," available free at all production planning offices.

Ear to the Ground—Next step is to keep informed on opportunities for obtaining military and essential civilian work. You can take your chances on being informed by prime contractors on subcontracts available or you can be more systematic by advertising for defense orders and obtaining the daily and weekly contract information.

In advertising, be sure to give detailed descriptions of your production facilities, total employment, size of engineering staff, rail shipping facilities and a list of products now made and others you would like to make.

Basic Data—A daily synopsis of bid information and a weekly synopsis of contracts placed can be obtained from any of the Commerce Department's 87 field offices and from more than 5000 procurement information co-operating offices all over the U. S. and possessions. The co-operating offices are mainly chambers of commerce, boards of trade, public libraries, trade associations and labor union locals.

Comprehensive—The daily synopsis of bid information lists all the bid invitations of the Department of Defense and other government departments and agencies. The weekly synopsis of contracts placed lists all awards, whether resulting from competitive bidding or negotiation, excepting those of a classified nature. For opportunities to get in on business under classified contracts, you will have to depend on your local armed service procurement planning office.

Another government service with which you should be familiar is the "Government Procurement Manual." This is a loose-leaf book compiled and maintained by the Office of Small Business, National Production Authority. It is not for sale, but may be seen at the 87 Commerce Department field offices and at its 5000 procurement information offices. That lists all government purchasing offices and the items each one buys.

Finally, you will want to keep informed about controls clamped by the NPA on the use of materials. You can do this adequately by reading STEEL each week. In this issue, p. 49, is a digest of latest NPA orders issued in connection with metals. New orders, and amendments, will be reported each week as they are placed in effect.

NEA

MILITARY TRUCKS START ROLLING AT DODGE PLANT
. . . M-37 cargo vehicles assembled along with civilian units

Where To Go for Defense Production Information

FIELD and headquarters offices of claimant agencies responsible for production planning with industrial management are listed below. Offices are listed under city names, arranged alphabetically, in which located.

Unless you are already participating in defense production, you should communicate with the field office nearest you for information concerning the production allocation program and leads for any subcontracting work.

That's recommended in lieu of direct communication with headquarters offices, as implementation of the program is in most cases vested with field personnel.

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Supervisor of Shipbuilding, USN
John Trumpy & Sons, Inc.

ATLANTA
Atlanta Chemical Proc. Dist., USA
114 Marietta Street, NW
Atlanta Procurement Office
Corps of Engineers, USA
Old Post Office Building
Quartermaster Corps, USA
Industrial Mobilization Dist. Off.
441 W. Peachtree Street, NE
Inspector of Naval Material, USN
114 Marietta Street, NW

BALTIMORE
Inspector of Naval Material, USN
401 Water Street
BuAeronautics Rep., USN
Glenn L. Martin Company

BATH, ME.
Supervisor of Shipbuilding, USN
Bath Iron Works

BETHLEHEM, PA.
Naval Inspector of Ordnance, USN
Bethlehem Steel Corporation

BETHPAGE, Long Island, N. Y.
BuAeronautics Rep., USN
Grumman Aircraft Engine Corp.

BIRMINGHAM
Birmingham Ord. District, USA
734 Frank Nelson Building

BOSTON
Boston Ordnance District, USA
Boston Army Supply Base
Quartermaster Corps, USA
Industrial Mobilization Dist. Off.
Boston Army Base
Boston Chemical Proc. Dist., USA
Boston Army Base
Supervising Inspector of Naval Material, USN
495 Summer Street, Navy Bldg.
Inspector of Naval Material, USN
495 Summer Street, Navy Bldg.
Industrial Manager, USN
Boston Naval Shipyard
Air Force Procurement Field Off.
Boston Army Base

BREMERTON, WASH.
Industrial Manager, USN
Puget Sound Naval Shipyard

BRIDGEPORT, CONN.
Inspector of Naval Material, USN
1285 Boston Avenue

BROOKLYN, NEW YORK
Armed Services Medical Proc. Agency
Ind'l. Mob. & Proc. Plng. Div.
84 Sands Street
Transportation Corps, USA
Ind'l. Mob. Planning Office
N. Y. Port of Embarkation
1st Avenue and 58th Street
Bureau of Aeronautics
General Representative, USN
N. Y. Naval Shipyard, Bldg. 3
Supervising Inspector of Naval Material, USN
N. Y. Naval Shipyard, Bldg. 3
Inspector of Naval Material, USN
N. Y. Naval Shipyard, Bldg. 3
Industrial Manager, USN
New York Naval Shipyard

BUFFALO
Inspector of Naval Material, USN
Old Post Office Building
BuAeronautics Rep., USN
Cornell Aeronautical Laboratory
Post Office Box 235

BURBANK, CALIF.
BuAeronautics Rep., USN
Fact'y A—Lockheed Aircraft Corp.

CAMDEN, N. J.
Supervisor of Shipbuilding, USN
New York Shipbuilding Corp.

CHARLESTON, S. C.
Industrial Manager, USN
Charleston Naval Shipyard

CHICAGO
Chicago Chemical Proc. Dist., USA
226 West Jackson Boulevard
Chicago Procurement Office
Corps of Engineers, USA
226 W. Jackson Boulevard
Chicago Ordnance District, USA
1660 E. Hyde Park Blvd.
Quartermaster Corps, USA
Ind'l. Mobilization Planning Div.
Chicago Quartermaster Depot
1819 W. Pershing Road
Armed Services Medical Proc. Agency
Ind'l. Mobilization Planning Off.
1819 W. Pershing Road
Supervising Inspector of Naval Material, USN
226 W. Jackson Blvd.
Inspector of Naval Material, USN
226 W. Jackson Blvd.
Industrial Manager, USN
844 Rush Street
American-Fore Bldg., Rm. 130
Air Force Proc. Field Office
209 W. Jackson Blvd.

CINCINNATI
Cincinnati Procurement Office
Corps of Engineers, USA
U. S. Post Office & Court House
Cincinnati Ordnance Dist., USA
Big Four Building
Inspector of Naval Material, USN
Kroeger Building, 35 E. 7th St.

CLEVELAND
Cleveland Ord. Dist., USA
717 Superior Ave., NE
Supervising Inspector of Naval Material, USN, WJW Building
Inspector of Naval Material, USN
WJW Building
U. S. Navy Inspector of Machinery
General Motors Corporation
Cleveland Diesel Engine Div.
2160 W. 106th Street
BuAeronautics Rep., USN
Thompson Products Inc.

COLLEGE POINT, Long Island, N.Y.
BuAeronautics Rep., USN
Edo Corporation

COLUMBUS, O.
Transportation Corps, USA
Ind'l. Mob. Planning Office
Columbus General Distr. Depot
BuAeronautics Rep., USN
Curtiss-Wright Corp. — Airplane Div.

DALLAS
Dallas Chemical Proc. Dist., USA
1114 Commerce Street
Dallas Procurement Office
Corps of Engineers, USA
1114 Commerce Street
BuAeronautics Rep., USN
Naval Ind. Res. Plant Aero.
Post Office Box 5907

DAYTON, O.
Hqs. Air Materiel Command, USAF
Director Proc. & Ind'l. Plng.
Industrial Mob. Planning Div.
BuAeronautics, Gen. Rep., USN
Wright-Patterson Air Force Base
Air Force Proc. Field Office
Wright-Patterson Air Force Base

DETROIT
Detroit Procurement Office
Corps of Engineers, USA
609 Federal Building
Detroit Ordnance District, USA
6501 West Jefferson Avenue
Inspector of Naval Material, USN
11111 French Road
Air Force Proc. Field Office
W. Warren & Lonyo Avenues

DOWNEY, CALIF.
BuAeronautics Rep., USN
North American Aviation Inc.

EAST HARTFORD, CONN.
BuAeronautics Rep., USN
Pratt and Whitney Aircraft Div.
United Aircraft Corp.

EL SEGUNDO, CALIF.
BuAeronautics Rep., USN
El Segundo Division
Douglas Aircraft Co. Inc.

ESSINGTON, PA.
U. S. Navy Inspector of Machinery
Westinghouse Electric Corp.
BuAeronautics Rep., USN
Westinghouse Electric Corp.

FORT WAYNE, IND.
Inspector of Naval Material, USN
116 E. Wayne Street

FORT WORTH, TEX.
Air Force Proc. Field Office
Government Aircraft Plant No. 4

GROTON, CONN.
Supervisor of Shipbuilding, USN
Electric Boat Company

HOUSTON
Inspector of Naval Material, USN
Federal Office Building

INDIANAPOLIS, IND.
BuAeronautics Rep., USN
Allison Div., Gen'l Motors Corp.

JACKSONVILLE, FLA.
Asst. Industrial Manager, USN
1453 Morse Street

JOLIET, ILL.
BuAeronautics Rep., USN
Globe Corp.—Aircraft Div.,
Box 922

KANSAS CITY, MO.
BuAeronautics Rep., USN
Westinghouse Electric Corp.
Box 288

LONG BEACH, CALIF.
Industrial Manager, USN
Long Beach Naval Shipyard

LONG ISLAND CITY, N. Y.
Naval Inspector of Ordnance, USN
Ford Instrument Company

LOS ANGELES
Los Angeles Ord. Dist., USA
35 North Raymond Avenue
Bureau of Aeronautics
General Representative, USN
1206 S. Santee Street
Inspector of Naval Material, USN
1206 S. Santee Street
Air Force Proc. Field Office
P.O. Box 3849, Terminal Annex
155 W. Washington Boulevard

MILWAUKEE
Inspector of Naval Material, USN
Federal Building

MINNEAPOLIS
Naval Inspector of Ordnance, USN
Northern Pump Company

MORTON, PA.
BuAeronautics Rep., USN
Piasecki Helicopter Corp.

NEWARK, N. J.
Inspector of Naval Material, USN
1060 Broad Street

NEW ORLEANS
Transportation Corps, USA
Ind'l. Mob. Planning Office
Poland & Dauphine Streets
Industrial Manager, USN
Naval Station

NEWPORT NEWS, VA.
Supervisor of Shipbuilding, USN
Newport News Shipbuilding and Dry Dock Company

NEW YORK CITY
New York Chemical Proc. Dist., USA
111 East 16th Street
New York Procurement Office
Corps of Engineers, USA
90 Church Street
New York Ordnance Dist., USA
111 East 16th Street
Quartermaster Corps, USA
Ind'l. Mobilization Division
QM Purchasing Office
111 E. 16th Street
Transportation Corps, USA
(See Brooklyn)
Supervisor of Shipbuilding, USN
11 Broadway
Air Force Proc. Field Office
67 Broad Street

NICETOWN, PA.
Naval Inspector of Ordnance, USN
The Midvale Company

OAKLAND, CALIF.
San Francisco Proc. Office
Corps of Engineers, USA
Bldg. T-1, Oakland Army Base
Quartermaster Corps, USA
Ind'l. Mob. Dist. Office
Oakland Army Base
San Francisco Chemical Proc. Dist.
Bldg. 1, Wing 3
Oakland Army Base
Armed Services Medical Proc. Agency
Ind. Mob. Planning Office
U. S. Naval Medical Supply Depot

PASADENA, CALIF.
BuAeronautics Rep., USN
15 So. Raymond Street

PHILADELPHIA
Signal Corps, USA, Proc. Dist.
2800 South 20th Street
Philadelphia Procurement Office
Corps of Engineers, USA
City Centre Bldg., 121 N. Broad St.
Philadelphia Ordnance Dist., USA
238 East Wyoming Avenue
Quartermaster Corps, USA
Ind'l. Mob. District Office
2800 South 20th Street
Supervising Inspector of Naval Material, USN, Philadelphia Dist.
(See Upper Darby, Pennsylvania)
Industrial Manager, USN
Philadelphia Naval Shipyard

PITTSBURGH, PA.
Pittsburgh Procurement Office
Corps of Engineers, USA
1010 Plaza Bldg.—535 5th Avenue
Pittsburgh Ordnance District, USA
311 Old Post Office Building
4th Avenue & Smithfield Street
Supervising Inspector of Naval Material, USN
401 Old Post Office Building

PORTSMOUTH, VA.
Industrial Manager, USN
Norfolk Naval Shipyard

QUINCY, MASS.
Supervisor of Shipbuilding, USN
Bethlehem Steel Company

ROCHESTER, N. Y.
Rochester Ordnance District, USA
Sibley Tower Building
Naval Inspector of Ordnance, USN
Eastman Kodak Company

ROCKAWAY, N. J.
BuAeronautics Rep., USN
Reaction Motors, Inc.
Elm & Sickle Streets

SAN DIEGO, CALIF.
BuAeronautics Rep., USN
Consolidated Vultee Aircraft Corp.

SAN FRANCISCO
San Francisco Chemical Proc. Dist., USA (See Oakland)
San Francisco Proc. Office
Corps of Engineers, USA
(See Oakland, Calif.)
San Francisco Ordnance Dist., USA
Oakland Army Base
Transportation Corps, USA
Ind'l. Mob. Planning Office, Fort Mason, Bay & Van Ness Aves.
Inspector of Naval Material, USN
Bldg. 18, Foot of 20th Street
Asst. Industrial Manager, USN
San Francisco Naval Shipyard

SCHENECTADY, N. Y.
U. S. Navy Inspector of Machinery
General Electric Company

SEATTLE
Seattle Procurement Office
Corps of Engineers, USA
4735 E. Marginal Way
Inspector of Naval Material, USN
Federal Office Building

SPRINGFIELD, MASS.
Springfield Ordnance District, USA
Springfield Armory
Inspector of Naval Material, USN
Post Office Building

ST. LOUIS
St. Louis Procurement Office
Corps of Engineers, USA
1222 Boatmans Bank Bldg.
314 N. Broadway
St. Louis Ord. Dist., USA
4300 Goodfellow Blvd.
Inspector of Naval Material, USN
Old Customs House
815 Olive Street
BuAeronautics Rep., USN
McDonnell Aircraft Corp.
Post Office Box 156

SYRACUSE, N. Y.
Inspector of Naval Material, USN
General Electric Company
Electronic Parts Plant

TETERBORO, N. J.
BuAeronautics Rep., USN
Eclipse Pioneer Div.
Bendix Aviation Corp.

UPPER DARBY, PA.
Supervising Inspector of Naval Material (Philadelphia District)
17 Brief Avenue
Inspector of Naval Material
(Philadelphia District)
17 Brief Avenue

VALLEJO, CALIF.
Industrial Manager, USN
Mare Island Naval Shipyard

WOODRIDGE, N. J.
BuAeronautics Rep., USN
Wright Aeronautical Corp.

WASHINGTON 25, D. C.

1. Department of the Army
Office of Director of Logistics
Logistics Division
   a. Office of Chief Chemical Corps, USA
   Supply & Procurement Division
   Technical Staff
   b. Office of Chief of Engineers, USA
   Procurement Division
   Military Supply & Procurement
   c. Office of Chief of Ordnance, USA
   Industrial Division
   d. Office of Quartermaster General, USA
   Military Planning Division
   Industrial Mobilization Branch
   e. Office of The Surgeon General, USA
   Supply Planning Branch
   Supply Division
   f. Office of Chief, Signal Officer, USA
   Industrial Mobilization Branch
   Procurement & Distribution Division
   g. Office of Chief of Transportation, USA
   Industrial Mobilization Planning Branch
   Supply and Facilities Division

2. Department of the Navy
Office of Naval Material
   a. Chief of Bureau of Aeronautics, USN
   Code IP-11
   b. Chief of Bureau of Medicine and Surgery, USN
   c. Chief of Bureau of Ordnance, USN
   Code Mad-2
   d. Chief of Bureau of Ships, USN
   Code 750
   e. Chief of Bureau of Supplies and Accounts, USN
   Code SO-2
   f. Chief of Bureau of Yards and Docks, USN
   Industrial Mobilization Planning Division
   Code B-550
   g. Commandant, Marine Corps
   Planning & Statistics Division
   Quartermaster General
   h. Chief of Naval Research, USN
   Office of Under Secretary of the Navy
   i. Naval Inspector of Ordnance, USN
   Naval Gun Factory

3. Department of the Air Force
Deputy Chief of Staff, Materiel
Director Procurement & Industrial Planning
Industrial Planning Division
   a. Hqs. Air Materiel Command, USAF
   Director Procurement & Industrial Mob. Planning
   Industrial Mobilization Planning Division
   Dayton, Ohio

4. Atomic Energy Commission
Mobilization Planning Branch
1901 Constitution Avenue, NW

5. National Advisory Committee for Aeronautics
Procurement Division
1724 "F" Street, NW

6. United States Maritime Commission
Chief, Bureau of General Services
4814 A Commerce Building
14th and Constitution Avenue, NW

What Can Be Made for Defense?

Here are what some companies did in World War II or are doing now. World War II experience is usually the pattern for now

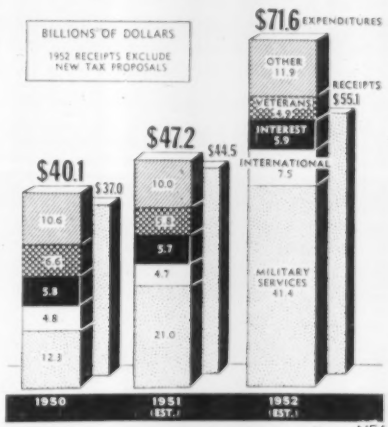
WHAT products can you make for defense? Or can you modify your civilian line to fit into the current production picture?

To help you get your feet on the ground, STEEL has checked with these representatives in Cleveland, Detroit and Pittsburgh plants to find out what they did in World War II or are doing now to convert:

Company	Civilian Products	Defense Products
Apex Electrical Mfg. Co.	Appliances	Machine gun mounts
Harris-Seybold Co.	Printing Equipment	Submarine guns, radar equipment
F. C. Russell Co.	Windows	Prime windows for plants, primarily
Cleveland Steel Barrel Co.	Barrels, drums	Same line modified for govt. specification
Euclid Road Machinery Co.	Mining, quarrying, construction equipment	Same line, plus Navy mine buoys
Baker-Raulang Co.	Trucks, tractors, cranes	Same line modified for govt. specification plus bomb-handling trucks
Detroit Harvester Co.	Farm equipment	Cartridge cases, parts for aircraft engines
Buhl Mfg. Co.	Dairy ware, automotive and aircraft parts, appliances	Exhaust manifolds, exhaust systems for tank and aircraft engines
F. L. Jacobs Co.	Auto parts, die castings	Tank parts, fuses, rockets, gun mounts, ammunition racks, wing sections
Motors Metal Mfg. Co.	Auto stampings, assemblies	Droppable fuel tanks, vehicle parts
Detroit Steel Products Co.	Building panels, windows, auto parts	Bailey bridges, watertight doors, hatches, armor plate
Palley Mfg. Co.	Cabinets, metal stampings	Bomb components, fire extinguishers, ammunition boxes, cartridge cases
James H. Matthews & Co.	Marking devices, signs	Jet engine parts, ship propellers
Horix Mfg. Co.	Conveyors, receptacle filling machinery	Bomb, fuse parts
Armstrong & White	Back-up plates for grinding wheels, cut-off wheel inserts	Rocket fins, bomb parts, aircraft gaskets

$1.6 Million More To Cadillac

General Motors Cadillac Division was allotted an additional $1.6 million by the Army Ordnance Corps this week for development and building of a new combat vehicle at its Cleveland tank plant. The new contract raises total commitments to the Cleveland plant to $500 million. Cadillac said the contract may step up its production program to require an eventual 16,000 employees.



MONEY, MONEY: Here's how estimated expenditures for major items in the budget for fiscal 1952 (beginning July 1, 1951) compare with the same items in the past two fiscal years. Military spending in fiscal 1952 will be nearly double that for fiscal 1951

Yoder Gets Defense Contract

Contract for 382,000 high-explosive shells of the 105-millimeter size, aggregating $4.8 million and extending over a period of 12 months, has been awarded by the defense department to the Yoder Co., Cleveland. A plant addition covering 35,000 square feet will be erected to house hot forging equipment, furnaces and necessary machine tools, requiring expenditure of $1,350,000. Some equipment will be provided from government surplus stocks. Production will be under way in four months, with 300 additional employees to be hired. Yoder turned out large quantities of a similar type of shell in World War II.

More NPA Metal Orders Seen

Here are a few more links in the chain reaction of defense preparation being forged by the National Produc-

tion Authority. All will have important repercussions on the metals industry.

An end use limitation order on aluminum, about ready for final review, may be announced this week. Another order limiting zinc end use will take effect soon and will apply only to high grade zinc, not prime western; it will affect die casting and brass mills, but not galvanizers.

With the recent tungsten order throwing an extra burden on molybdenum, the latter is the subject of a limitation order now being written. The thickness of tin on tin plate and other tin uses will be regulated within 2 to 3 weeks.

Representatives of the ferroalloys industry have been told a manganese conservation program is being considered.

Plans for accelerating scrap collecting operations and securing of capital equipment and assistance in expanding plants for scrap processing have been under discussion by the NPA.

Steel Wages Reach New High

Hourly payments to wage earners in the iron and steel industry reached an average of $1.763 per hour in November, a new high. This is compared with $1.726 in October. Total employment in November was less than 1 per cent below the previous record month, June, 1942.

Average payment to hourly, piecework and tonnage workers for 11 months of 1950 was $1.725, compared with $1.703 in the same period in 1949, says American Iron & Steel Institute. November employment was 653,000, up 2800 over October, while the total payroll was almost $208 million, down $1 million from the record in October. Wage earners worked an average of 39.8 hours a week in November.

Combine Seeks Ore Property

An agreement to explore and an option to lease iron ore property in the Steep Rock Lake area in western Ontario are being negotiated by Pickands Mather & Co. Acting for a group of steel and iron ore producers, the Cleveland company is proceeding with exploratory work on over 1000 acres in the vicinity of property optioned by Inland Steel Co. from Steep Rock Iron Mines Ltd. a year ago.

Other members of the group are Bethlehem Steel Co., Youngstown Sheet & Tube Co., Steel Co. of Canada Ltd., and Interlake Iron Corp.

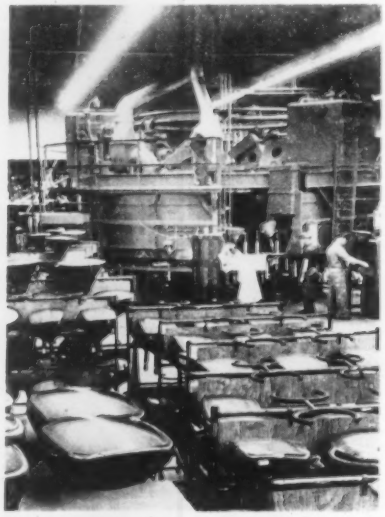
Save Your Equipment

Mobilization puts added importance on preventive maintenance of plant and machinery

LONGER LIFE for machinery and equipment through preventive maintenance takes on added significance as the nation goes further along the road to large-scale defense production. Exhibitors at the second Plant Maintenance Conference in Cleveland last week expressed surprise and gratification in the interest shown by those attending. New ideas and equipment got a big play and the viewers didn't waste any time in getting down to cases as to how these could be applied in their own plants.

Stitch in Time—The memory of running machines full-tilt for long hours is still fresh in the minds of many metalworking people and they know the proverbial "stitch in time" means greater production and savings in repairs. Large-scale defense production will mean operations with inexperienced help, and these green hands won't be able to coddle a machine and keep it on the line. It will have to be in good shape. Preventive maintenance is the answer.

Versatility and portability of maintenance equipment were striking features of the exhibits which more than doubled from last year's show.



BIG: New 30-foot-diameter rotary exhausting sealing machine for production of super-size TV picture tubes goes into production at the Seneca Falls, N. Y., plant of Sylvania Electric Products Inc. Capable of processing as many as 24 24-inch diameter tubes simultaneously, the machine cost about $250,000

Much of the equipment can be taken to the job and thereby reduce down time on production machinery. No longer is it necessary to tear down equipment and haul it to a repair shop. Operations such as milling, grinding, pipe bending, thread cutting and gear degreasing can be performed on location with equipment that can be transported by one man. Power supplied through portable lines to this maintenance machinery means faster work with far less muscular exertion.

For the Record—Maintenance department problems in a variety of industries received close attention at the technical meetings. William A. Perry, Inland Steel Co., pointed to the need for records and reports in order to have a successful preventive maintenance program.

Importance of selecting the right piece of electrical equipment for the job was discussed by K. C. Mobarry, General Electric Co. Real savings can result to the company from proper selection and installation of equipment, but all too often preconceived ideas or low purchase price bring about costly maintenance which could have been avoided if the problem were considered before buying, he commented. S. W. Watkins, Warner & Swasey Co., urged managements to re-examine their attitude in regard to electrical machinery maintenance and improve its quality by attracting better personnel. Only through providing proper facilities and authority can the job be done, and these factors are often overlooked by management, he said. Incentive payment for maintenance workers is a forward step in a number of companies, said G. E. Meyers, Ernst & Ernst. He explained the incentive system provides a definite means of reducing mantenance labor costs by highlighting instances where costs are out of line and giving maintenance employees a goal to work toward.

Win with Factories—Productive capacity is the basic necessity for victory, Herman W. Steinkraus, president, Bridgeport Brass Co., told maintenance men attending the conference banquet. The U.S. can't compete with Russia and her satellites in manpower so we must make ourselves strong by producing more and better equipment for our fighting men. The worker's morale is of prime importance in attaining high production, he said. Maintaining equipment in this era is a must because high production cannot be reached or continued if productive machinery and plants are not in first-class shape.

Lone Star Gets Loan

Government provides $73 million for steelmaking and pipe facilities in Texas

LONE STAR STEEL CO. will add 500,000 tons of ingot capacity and 350,000 tons of electric weld pipe capacity within the next 18 months. Company will receive government loans totaling $73,425,201 to finance its expansion program, for which a certificate of necessity was granted in mid-December.

New facilities will include four rolling mills, electric forming and welding equipment to make oil field goods from 3 to 16 inches in diameter. They will be located at Lone Star, Tex.

Reconstruction Finance Corp. will provide $50 million to be secured by a first mortgage on the company's property. The remaining $23,425,201 will be loaned under the Defense Production Act. The company is required by terms of the loans to raise $9 million in equity and working capital.

New England Mill Likely

New England's hopes for its own integrated steel mill may soon be realized. The government has granted a certificate of necessity for $250 million for the new facility and proponents believe a site may be acquired, financing arranged, engineering work completed to make possible beginning construction of a million-ton plant this summer.

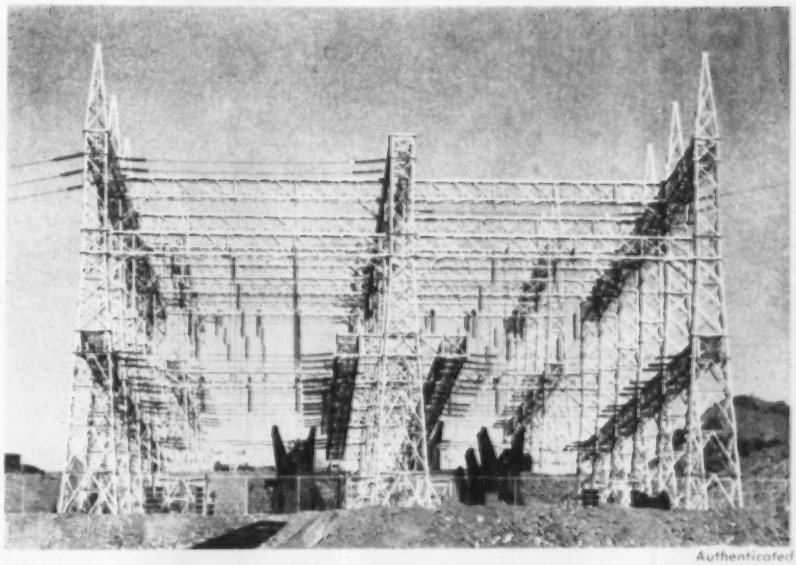
A major question to be decided is whether the new England Steel Development Corp. will enlist the aid of an established steel company to build the mill. Conversations with several steel companies are underway. Failing in these, the New Englanders may proceed independently.

RFC May Help—Financing is not considered a serious problem, now that permission for a fast tax write-off has been granted. The Reconstruction Finance Corp. is reported ready to give financial aid if requested.

Site for the new mill probably will be a 1600-acre tract about six miles west of New London, Conn. Much of the land is owned by the state of Connecticut and is promised for the project. The tract has 8000 feet of waterfront, accommodating large vessels, and is served by the New York, New Haven & Hartford and Central Vermont railroads.

Fourth for Seaboard — The New England mill would be the fourth on the Atlantic seaboard. Bethlehem's plant at Sparrows Point, Md., is the only one now in production. U. S. Steel is building at Morrisville, Pa., and National Steel Corp. will build near Paulsboro, N. J.

Products to be made at the New England plant will include hot and cold-rolled sheets up to 60 inches in width, hot and cold-rolled strip, light plates and butt weld pipe, one-half to two inches in diameter. Galvanizing facilities will be included. A tin mill may be installed later.



Authenticated

MORE POWER: Power production from the hydroelectric plant at the new Davis Dam on the Colorado river between Arizona and Nevada has started. The first generator is in operation and all five will be running by July. Generated will be about 1 billion kwhr annually for farmers and new defense industries of the Southwest. The picture shows the 230 kv switchyard at the dam

Carpenter Plans New Mill

A combination hot-rolled strip, bar and rod mill, to cost $3 million, will be installed by Carpenter Steel Co., Reading, Pa. The mill will be especially designed to meet Carpenter's requirements and is described as being "unlike any now in existence."

Pressed Steel Reopens Depot

The Pressed Steel Car Co. has received a contract from Army Ordnance Corps to reopen its Hegeswich plant in Chicago, Ill., to process combat vehicles. The commitment involves more than $10 million and the company expects the first tanks to be processed will be received at the plant this month.

The Hegeswich plant is the first contractor-operator to be set up in the conversion program and will occupy the same facilities used by Pressed Steel when it processed more than 10,000 Sherman tanks in World War II. No new building construction will be required before operations begin.

Tungsten Mined in Clouds

Critical at any time and even more vitally needed now is tungsten, currently being mined two miles above sea level at Pine Creek, Calif. U. S. Vanadium Corp., by working 24 hours a day, seven days a week is producing an undisclosed amount of the metal with 250 employees. Three housing projects, including one with a school, are nestled in the High Sierras.

Operations are carried on at four levels, the top one over the 11,000 foot mark. Total diggings honeycomb the mountain for almost 12 miles. Ore is crushed into baseball size pieces and moved by conveyor belt to a tramway. Twenty-four high riding buckets carry the ore to the company's mill on the 7200-foot level. Refined here to pellet-sized compounds, the ore is shipped East where it is refined into pure tungsten metallic powder.

Atlantic Steel Aims Higher

Doubled output will result from expansion plans announced by Atlantic Steel Co., Atlanta. In breaking 13 production records last year, the company produced 200,830 net tons of steel ingots. This is 24,500 tons above the previous high, says R. S. Lynch, company president.

Scrap Sights Raised

The scrap industry expects that 35 million gross tons will be needed in 1953

PURCHASED scrap consumption of 35 million gross tons—that volume, 17 per cent greater than the peak use in 1950, is what the scrap industry expects to help deliver in 1953.

Purchased scrap consumption last year was record-breaking at just under 30 million tons. Currently it is running in excess of 32.5 million tons. That was revealed at the New York convention last week of the Institute of Scrap Iron & Steel.

Human Element — The 200,000 people involved in collecting and processing scrap are one key to record-breaking steel production by the end of 1952 when steelmaking facilities are expected to be in operation to produce at the rate of 115 million net tons of ingots yearly. With insufficient scrap, steel production will miss the mark, says Edwin C. Barringer, executive vice president of the institute.

While salvage drives and emergency measures are helpful, the real job of providing the necessary scrap for the defense program will fall upon the dealer and collector. Collection must be made attractive enough to keep collectors on the job. The task of providing more than 30 million tons of scrap a year is enormous, but if the normal channels of trade are kept open, the industry can do the job, says Mr. Barringer.

Note of Caution—Herman D. Moskowitz, vice president, Schiavone-Bonomo Corp., and chairman of the institute's Liaison Committee to the government, warns that basic principles govern sound scrap economics, and these should be the guides in arriving at programs, regulations and controls. Price is interlocked with supply, he says, and those who think in terms of price rollbacks, especially before winter, must assume a serious responsibility for supply.

Government salvage drives, he says, during the last war were not always carefully planned, properly timed, or efficiently executed. He suggests that such drives in the future be the charge of the scrap industries directly concerned. In this way mixed accumulations of waste materials may be properly and efficiently integrated into merchandising and distribution processes with a minimum of confusion and waste.

Move Carefully—If and when government controls on scrap are needed, Mr. Moskowitz hopes that the government will move no faster than it is equipped to do to frame regulations clearly and enforce them equitably; that it will announce wage stabilization for scrap concurrent with price regulations; and that a control program—if deemed necessary—be put on all basic steel industries, including scrap, because they are all economically interlocked.

All officers were re-elected at the meeting of the board of directors: President, Stanley M. Kaplan, M. S. Kaplan Co., Chicago; 1st vice president, Ralph E. Ablon, Luria Bros., New York; 2nd vice president, C. C. Cohen, I. J. Cohen & Co., Kansas City, Kans.; secretary, M. L. Chase, Luntz Iron & Steel Co., Canton, O.; treasurer, S. G. Keywell, Pittsburgh.

Furnace Makers Mobilize

Industrial furnace manufacturers who turned in top performance in World War II are preparing to duplicate that effort in the present emergency. This was evident at the two-day meeting of the Industrial Furnace Manufacturers Association in Chicago, Jan. 15-16.

IFMA President Henry F. Heyn, sales manager, Heat Treat Division, Surface Combustion Corp., Toledo, O., emphasized that each day brings closer the realization furnaces for civilian production are on their way out. As much as it is disliked the industry "must again learn to accept temporarily regimentation, mobilization, controls, allocations and the generally disliked climate in which business is under wartime conditions."

Wanted: Engineers—"I believe the most critical and most vulnerable point in our industry is manpower. We are an engineering industry. It takes time and it is not easy to make a furnace engineer. Somehow we must make mobilization authorities realize that if we are to make the contribution expected our manpower must be kept intact. Disruption of our manpower is one of the errors of the last war that we must avoid."

Taking note of general predictions that there is going to be a lot of civilian business as usual, Mr. Heyn said, "there may be—but not for the furnace industry. It will be utilized 100 per cent for war production."

Pinch in Materials—Shortages of materials, essentially the nonferrous metals and alloys used in furnace construction, were discussed extensively along with manpower short-

High December Output Helps Set 1950 Steel Record

REMINISCENT of Babe Ruth in his prime is the 1950 record of the steel industry. Production in the United States reached a new high of 96,713,276 net tons, reports the American Iron & Steel Institute.

The previous record, set in 1944 was exceeded by over 7 million tons. Last year's output was about 9 per cent over the peacetime record set in 1948; and 24 per cent over 1949.

Had it not been for the snowstorm-curtailed production in late November (STEEL, Dec. 18, p. 67), production would have risen to more than 97 million tons last year.

Steelmaking furnaces operated at an average of 96.7 per cent of capacity in 1950, exceeding all past years except the war years 1941-43. December production of 8,359,798 tons, a record for that month, exceeded 1948 by over 579,000 tons. And December was the ninth successive month in which production exceeded 8 million tons.

Period 1950	Open-hearth Net Tons	Open-hearth % Capac.	Bessemer Net Tons	Bessemer % Capac.	Electric Net Tons	Electric % Capac.	Total Net Tons	Total % Capac.	Calculated Net Tons Weekly	No. weeks in mo.
Jan.	7,131,519	96.5	379,252	80.6	419,601	71.9	7,930,372	93.9	1,790,152	4.43
Feb.	6,142,178	92.0	255,565	60.2	395,502	75.0	6,793,245	89.1	1,698,311	4.00
Mar.	6,747,680	91.3	365,726	56.5	473,630	81.1	7,487,036	88.7	1,690,076	4.43
1st. Qtr.	20,021,377	93.3	900,543	65.9	1,288,733	76.0	22,210,653	90.6	1,727,111	12.86
Apr.	7,314,733	102.2	407,909	89.5	490,030	86.7	8,212,672	100.4	1,914,376	4.29
May	7,597,837	102.8	437,006	92.9	517,044	88.6	8,551,887	101.3	1,930,449	4.43
June	7,218,570	100.9	406,944	89.3	506,001	89.5	8,131,515	99.4	1,895,458	4.29
2nd Qtr.	22,131,140	102.0	1,251,859	90.6	1,513,075	88.2	24,896,074	100.4	1,913,611	13.01
1st Half	42,152,517	97.7	2,152,402	78.3	2,801,808	82.2	47,106,727	95.5	1,820,902	25.87
July	7,220,214	96.9	380,317	79.8	470,763	78.4	8,071,294	94.7	1,826,085	4.42
Aug.	7,315,215	98.0	405,118	84.8	509,984	84.7	8,230,317	96.3	1,857,859	4.43
Sept.	7,258,961	100.7	409,216	88.7	525,017	90.3	8,193,194	99.3	1,914,298	4.28
3rd Qtr.	21,794,390	98.5	1,194,651	84.4	1,505,764	84.4	24,494,805	96.7	1,865,560	13.13
9 mos.	63,946,907	98.0	3,347,053	80.4	4,307,572	82.9	71,601,532	95.9	1,835,937	39.00
Oct.	7,731,280	103.6	436,835	91.5	571,980	95.0	8,740,095	102.3	1,972,933	4.43
*Nov.	7,108,810	98.3	370,659	80.1	532,382	91.3	8,011,851	96.8	1,867,564	4.29
†Dec.	7,438,703	99.9	380,011	79.8	541,084	90.1	8,359,798	98.1	1,891,357	4.42
†4th Qtr.	22,278,793	100.6	1,187,505	83.8	1,645,446	92.2	25,111,744	99.1	1,911,092	13.14
†Last Half	44,073,183	99.6	2,382,156	84.1	3,151,210	88.3	49,606,549	97.9	1,888,335	26.27
†Total	86,225,700	98.6	4,534,558	81.3	5,953,018	85.3	96,713,276	96.7	1,854,877	52.14

Note—The percentages of capacity operated in the first 6 months are calculated on weekly capacities of 1,668,287 net tons open hearth, 106,195 net tons bessemer and 131,786 net tons electric ingots and steel for castings, total 1,906,268 net tons; based on annual capacities as of Jan. 1, 1950 as follows: Open hearth 86,984,490 net tons, bessemer 5,537,000 net tons, electric 6,871,310 net tons, total 99,392,800 net tons. Beginning July 1, 1950, the percentages of capacity operated are calculated on weekly capacities of 1,685,059 net tons open hearth, 107,806 net tons bessemer and 135,856 net tons electric ingots and steel for castings, total 1,928,721 net tons; based on annual capacities as of July 1, 1950, as follows: Open hearth 87,858,990 net tons, bessemer 5,621,000 net tons, electric 7,083,510 net tons, total 100,563,500 net tons.

* Revised. † Preliminary figures, subject to revision.

age. It was revealed that some furnace builders on their own initiative have dug from their files the World War II limitation orders on these alloys and are now living by them.

William Adam Jr., vice president, Ajax Electric Co. Inc., Philadelphia, chairman of the association's mobilization committee, has prepared and made available to governmental agencies a comprehensive catalog of furnaces, indicating their uses, sizes and other pertinent details.

CHECKLIST ON CONTROLS

Materials Orders

METHYLENE CHLORIDE — M-21 permits the use of only the paint remover grade of methylene chloride for making paint remover and dry cleaning aids. The order reserves the refined or refrigerant grade for purposes where the paint remover grade cannot be used. NPA Order M-21. Effective Jan. 11, 1951.

ALUMINUM SCRAP—M-22 prohibits undue accumulation of aluminum scrap and permits only aluminum producers, approved smelters or fabricators to melt or otherwise use aluminum scrap. A generator or holder of scrap may hold it only long enough to accumulate a minimum carload, or 60 days, whichever occurs first. Thirty-two approved aluminum smelters and four approved aluminum fabricators are listed in the order. NPA Order M-22. Effective Jan. 12, 1951.

CARDED COTTON SALES YARN—M-23 limits the volume of rated orders each producer of this product must accept. NPA Order M-23. Effective Jan. 12, 1951.

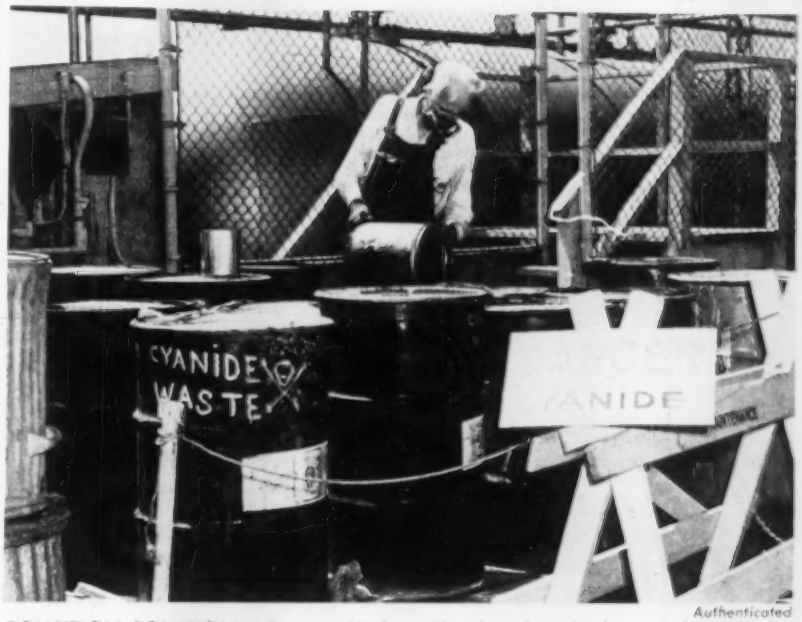
CONSTRUCTION — Amendment on Jan. 13, 1951, of NPA Order M-4 establishes a system under which virtually all new private commercial construction is subject to specific NPA authorization. NPA Order M-4, as amended Jan. 13, 1951. Effective Jan. 13, 1951.

ZINC—Amendment of Jan. 15, 1951, of NPA Order M-15 adds some definitions to the original text but does not alter coverage or purpose of the order. NPA Order M-15, as amended Jan. 15, 1951. Effective Jan. 15, 1951.

HOG BRISTLES—Amendment on Jan. 12, 1951, of NPA Order M-18 governs the use, inventories, and distribution of hog bristles and bristle products. NPA Order M-18, as amended Jan. 12, 1951. Effective Jan. 12, 1951.

Notices

ANTI-HOARDING — Amendment of Jan. 10, 1951, to NPA Notice 1 increases the list of materials subject to anti-hoarding provisions of Defense Production Act. The list of items covered by anti-hoarding provisions of the Defense Production Act is now virtually the same as that included in the inventory control regulation (NPA Regulation 1, issued Sept. 18, 1950). NPA Notice 1, as amended Jan. 10, 1951. Effective Jan. 10, 1951.



Authenticated

POLLUTION SOLUTION: Boeing Airplane Co. has found what to do with destructive cyanide waste from its Seattle plant. It seals toxic concentrations in drums, carries them to the sea and dumps them beyond the continental shelf

More Steel For Defense

Your chances of getting steel for civilian or nonrated goods production are getting slimmer.

The National Production Authority requested steel producers to increase substantially the set-aside percentages of many products Mar. 1 to allow for an expected increase in steel requirements under DO-rated military orders and directed programs. The changes will be formally included in a revision of NPA Order M-1 to be issued soon.

In the revised form, the order also will incorporate a number of changes about which producers have not yet been advised.

In addition, these products will be added to those already subject to lead-time, inventory and percentage set-aside controls: Steel castings, steel forgings, wire rope and strand, welded wire fabric, wire netting, pig iron, malleable and gray iron castings except soil pipe and pressure pipe. Lead time for these additional products, except pig iron, will be 45 days. Lead time for pig iron will be 30 days. Set-aside percentage ceilings for these additional products have not yet been announced.

The revised M-1 order also will establish the minimum size of steel mill orders.

The products in which the set-aside percentages have been increased, and the new and old percentages, are:

CARBON STEEL
(including low alloy high-strength steel)

	Old %	New %
Bars, hot-rolled (including light shapes); and hot-rolled bars, annealed or heat treated	5 total of all	10 total of all
Bars, reinforcing	5	15
Bars, cold-finished; and bars, cold-finished, annealed or heat treated	10 total of both	10 total of each
Rails and track accessories	10	10 of each
Semifinished steel, including blooms, slabs, billets, tube rounds, skelp	5	5 of each
Sheets, hot-rolled	10	12
Sheets, cold-rolled	10	12
Galvanized sheets	5	7
Sheets, all other coated	5	7
Sheets and strip, electrical	5	7
Strip, hot-rolled	5	10
Strip, cold-rolled	5	10
Structural shapes	15	20
Tin mill products, hot-dipped and electrolytic	5	5 of each
Wire products, including nails, staples, barbed and twisted wire, woven wire fence, and bale ties	5	5 of each

ALLOY STEEL

Bars, hot-rolled; and hot-rolled bars, annealed or heat treated	25 total of both	35 total of both
Bars, cold-finished; and bars, cold-finished, annealed or heat treated	15 total of both	25 total of both
Semifinished steel products	25	35 of each
Sheets and strip, electrical	5	7
Tubing, mechanical	25	35

STAINLESS STEEL

Forgings	0	25
Sheets, hot-rolled	10	25
Strip, hot-rolled	10	25
Strip, cold-rolled	10	25

Windows of Washington

By E. C. KREUTZBERG — *Washington Editor, STEEL*

Worrying about inflation? The President isn't. There's growing opinion he welcomes some of it—but he's just out of step, congressmen think

WHILE it long has been apparent that President Truman does not propose to use his price and wage control powers until organized labor is ready to go along, opinion is gaining in Washington that the President actually welcomes a certain amount of inflation. It is recalled that two years ago, when wages were in an upswing he remarked that when prices and wages go up nobody is hurt.

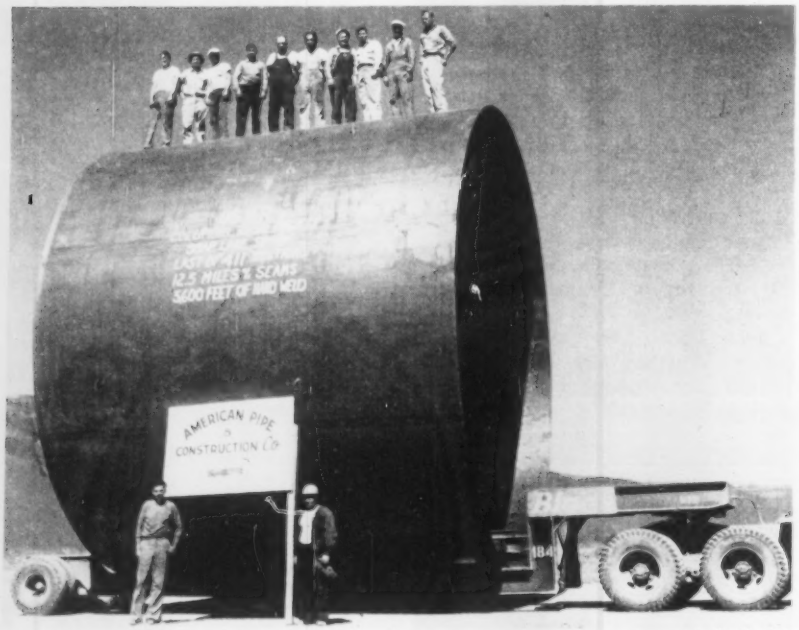
In his messages to the new Congress he has glossed over the strong inflationary trend. Instead he has given major emphasis to the need for more taxes and in his budget report he called for tax increases of around $16 to $20 billion. At the same time he renewed his requests for all his spending programs.

Out of Step—Just what the President has in mind is not clear. But it is clear that with reference to inflation he is no more in step with the views of many leading congressmen than on the subject of foreign policy. Congressmen are acutely aware of the effect of rising wages and prices and are receiving letters by the thousands from worried housewives and businessmen. One of his own party stalwarts, Senator O'Mahoney, blasted his economic message for revealing "no record of any positive steps to hold the line against inflation."

What will Congress do about taxes at this session? Best present indications are that Congress will vote a tax increase but it will not be of pay-as-you-go proportions. Trend of thinking seems to be toward that of such leaders as George, Taft, Byrd and others that taxes should be increased to whatever extent determined as reasonable, that regular government expenses should be sliced wherever possible and that much of the defense burden be absorbed by deficit financing.

More Mobilizers . . .

Two more principal aides have been appointed by Charles E. Wilson, director, Office of Defense Mobilization, both to serve without compensation. One is Col. Alfred E. Howse, U. S. Air Force, retired, who will advise on general economic policy. In World War II he supervised the development of the Air Force $50 billion procurement program; he also was author of the so-called "V-loan" program for war financing through the national banking system. The other aide is W. Howard Chase who will advise on information policy. Mr. Chase, on loan from General Foods Corp., New York, had been serving as information consultant to the secretary of Commerce and to Gen. W. H. Harrison during the latter's tenure as chairman of the National Production Authority.



Authenticated

NO PIPE DREAM: That's a section of real pipe you're looking at. And it's one of the reasons why steel plates have been hard to get. A lot of people want a lot of plates for a lot of things. This pipe, of ¼-inch welded steel plates, is the last of 411 sections for the Soap Lake siphon of the Columbia River Basin irrigation project

In Top Spot: Manganese Study...

Manganese research has risen to first place in defense metallurgical activities of the Bureau of Mines. In addition to seeking to make steel without manganese by keeping the sulphur content down (STEEL, Nov. 27, 1950, p. 34) and striving to salvage manganese from slag now going on dumps (STEEL, Aug. 21, 1950, p. 69), the bureau has these campaigns going:

At Rolla, Mo., it is working on a flotation technique to recover fines which now go to waste after log-washing the manganese nodules from Batesville, Ark., ore.

At Boulder City, Nev., it is erecting a pilot plant for development of a process of concentrating manganese ore from Artillery Peak, Ariz.

At Minneapolis it is working on separation of manganese from manganiferous ore of the Cuyuna range and it is exploring Cuyuna to determine how much manganiferous ore is there.

At College Park, Md., it is developing a technique for concentrating ore from Aroostook county, Me.

For Better Health in Industry . . .

To promote the health of employees and officials, the Atomic Energy Commission will offer fellowships in industrial medicine for the 1951-52 academic year. Fellows will be selected by a committee headed by Dr. James H. Sterner, associate medical director, Eastman Kodak Co. Training of the fellows will be slanted to the atomic energy industry but will include advanced work in the field of industrial medicine generally.

Sterling Nations' Dollar Reserves Rise

They're in better financial condition, but prospects for improved industrial production are bleaker than a year ago because of manpower and materials shortages

THE KOREAN war has helped bail Britain and other sterling nations out of their dollar difficulties.

Great Britain's gold and dollar reserves at the end of the year totaled $3.3 billion, compared with $1688 million at the end of 1949. The reserves are still only about one-third of their 1938 value in terms of purchasing power. The improved situation helps sterling countries other than the United Kingdom because their finances and economies are so intertwined with Britain's.

The U.K.'s total expenditure on investment in 1950—$6160 million—was a little more than in 1949, and it absorbed about one-fifth of the nation's resources. In the first ten months of 1950, the U. K. volume of industrial production was 8.5 to 9.0 per greater than in the same 1949 period.

Despite the brighter financial outlook, the sterling area's production prospects are bleaker than a year ago because of shortages in manpower, raw materials and equipment.

British Steel Output Hits High

British steel plants turned out a record 18,247,824 net tons of ingots in 1950, but steel supplies are as tight as ever. Full-scale allocations may have to be revived.

One reason for the shortage is that makers of rerolled steel products can't operate at capacity because their stocks of semifinished have been cut. Continental producers who hitherto have been their chief suppliers are unable to allocate the large tonnages possible a year ago. The zinc shortage is worsening and is crimping the output of galvanized sheets.

Producers of structural and other heavy steels have already sold nearly their entire 1951 production. High output of sheets and strip is also threatened.

Auto manufacturers will be particularly hard hit by sheet curtailments. They're also worried about manpower for much of the labor force for armament plants may be recruited from their workers. Britain has tentatively earmarked $840 million for rearmament in the next fiscal year, but that figure probably will be increased.

New orders booked by British shipyards in 1950 amounted to more than 1.5 million gross tons compared with less than 500,000 in 1949. Half of the 1950 orders were for oil tanks and the remainder for cargo liners, cargo tramps and other specialized types. The industry's total order book is about 3.5 million gross tons; about a third of that is for export.

Britain has had to revive the wartime scrap drives. The campaign is not confined to industrial generators of the material, but to householders, too.

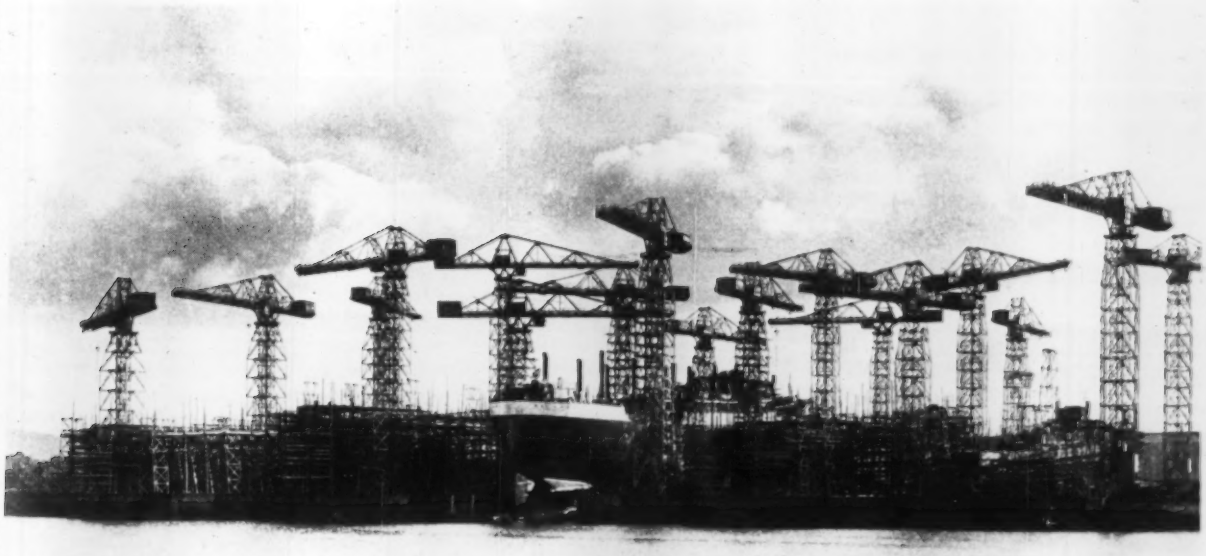
India May Build Steel Plant

India is reconsidering construction of a 500,000-ton steel plant in the state of Madhya Bharat. In 1949, Koppers Co. Inc., Arthur G. KcKee & Co. and International Construction Co., of England, submitted a consulting report to India that such a plant was justified. At the time the program was shelved for lack of funds.

The facility would cost about $187 million. India is now producing steel at the rate of 1 million tons a year, although she needs at least 50 per cent more than that.

The government has built a locomotive work shop at Chittaranjan about 148 miles from Calcutta. Complete locomotives will be made by 1954. Within two years after that, half of the 220 units estimated to be required annually by the country's railways will come from the plant. The remainder will be made by Tata Locomotive & Engineering Co. Ltd., Telco Works, Tatanagar.

Burma is completing plans for construction of a state-owned rolling mill. The plant would melt and roll 5000 tons of scrap iron and steel a year. An estimated 50,000 tons of



MORE SHIPS FOR DEFENSE: British shipyards are humming again as defense orders mount. The industry's order books are now crammed with contracts to build 3.5 million gross tons of shipping; about one-third of that will be for export. Shown in the photograph is the Musgrave yard of Harland & Wolff Ltd., located in Belfast, Ireland

GENERAL ELECTRIC ENTRY: GE's contribution to locomotive power is this 4500-hp Alco-GE gas turbine electric locomotive being fueled on the Union Pacific Railroad tracks at Council Bluffs, Iowa. This unit is similar to 10 new locomotives which UP has ordered from the Schenectady, N. Y., producer. UP has been testing it for a year and a half

WESTINGHOUSE ENTRY: The Westinghouse gas turbine locomotive is this 4000-hp unit which was rail tested in 1950 and is scheduled for further tests and revenue service. Two gas turbine units drive generators that feed electric power to motors on the wheels. Development of this giant was part of the company's $50 million 1950 research program

scrap are available in the country. The erection of the mill, which is expected to cost nearly $400,000, will be under the direction of the Ministry of Industry & Mines, Rangoon.

South Africa Finds Manganese

Mineral-rich South Africa may help solve America's manganese shortage.

S. A. Minerals Corp. Ltd. says newly discovered fields in southwest Africa have a "tremendous potential and are a discovery of world importance." When developed, the deposits in the Otjiwarongo district could produce high-grade manganese ore at rate of 78,000 net tons a year. The company has 64 base mineral claims on seven farms in the district. The field can be developed at a cost of about $980,000.

The Union's economy has already had a shot in the arm by development of techniques to extract uranium from gold in its extensive deposits.

Steel Co. of Canada To Expand

A $40 million plant expansion program of Steel Co. of Canada Ltd., Hamilton, Ont., will raise its total capacity to a rate four times that of 1939, or 1.9 million tons a year. Enlargement should be completed in 18 months, says H. G. Hilton, president. Expansion consists of dock and storage facilities, another blast furnace and an open hearth shop with four 250-ton furnaces.

Heat Limits Raised

New refractory, fused stabilized zirconia, extends temperature range to 4600° F

ZIRCONIA, a new refractory made in a fused, stabilized form, is extending the horizon of processing at high temperatures. Made in molded shapes that will withstand temperatures up to 4600° F, the ultra-high temperature material will see use in containers and conveyors for molten steel and other metals with even higher melting points, furnace linings for gas synthesis and heating elements for electric furnaces.

The product of several years of research by Norton Co., Worcester, Mass., the refractory is made from zircon sand found in Florida. It is a fused product of the electric furnace. Advantages include a high melting point (4620° F), low thermal conductivity, low volatility, good thermal shock resistance, low reactivity and low electrical resistivity. It is a poor electrical conductor at low temperatures, but an excellent conductor when subjected to high heat.

Anticipating a considerable demand for fused stabilized zirconia refractories, the company is expanding its manufacturing facilities at Worcester. The material is also being made in grain form at the Chippawa, Ont., plant of the company.

To speed up the molding of many zirconia shapes, automatic processes are being developed. Currently standard sizes of bricks and some plates, disks, tubes and special shapes are being made. As demand increases, stocks of the finished products will be maintained.

Tank Castings Boost Output

Symington-Gould Corp. is increasing production and employment as a result of receiving orders for railroad and tank castings, to be produced at its Depew, N. Y., plant. The plant now has sufficient backlogs to keep it at capacity levels for the remainder of the year.

Whiting Licks Smog

Irritating smoke from foundry furnaces, long a contributing factor to air-polluting smog, has been curbed at the Los Angeles plant of General Metals Corp.

The furnaces for General Metals foundry were built by Whiting Corp., Harvey, Ill., with smog control geared to Los Angeles regulations. It developed that the normal volume and composition of the foundry smog fell short of new regulations imposed subsequent to the letting of the Whiting contract. After a year and a half of

special research, solution to the problem is now in the bag; smog is siphoned away before release to the atmosphere by means of a glass bag house.

The bag house operates like a large vacuum cleaner. It uses fiber glass bags which withstand temperatures up to 750 degrees fahrenheit. A blower in the bag house sucks furnace smog into the bags, which can capture particles comparable in size to those found in cigaret smoke.

Lockheed Reopens Georgia Plant

Lockheed Aircraft Corp., Burbank, Calif., will reopen the 5 million-square-foot bomber plant at Marietta, Ga., idle since the end of World War II. To be undertaken at the plant will be combat modification of B-29 Super Fortress bombers. Later, complete airplanes of an undesignated type will be manufactured.

Robert E. Gross, Lockheed president, said that the plant will be cleared of war surplus material before Lockheed moves in. Legal and contract details with the Air Force are pending.

Lockheed's management of the Marietta plant resulted from studies made by the military services and aircraft companies during the past two years to determine how standby plants could best be used under accelerated national defense.

Black & Decker Buys in Md.

Black & Decker Mfg. Co., Towson, Md., has purchased 180 acres at Hampstead, Md., for the construction of additional facilities for making portable electric tools. The Towson plant will remain in full operation. S. Duncan Black, president, says that ground will be broken at the new site in April or May and that an estimated 300 to 400 people will be employed.

U.S. Steel Works Consolidated

To further consolidate manufacture of sheet steel in the Pittsburgh district, U. S. Steel Co. Wood Works at McKeesport, Pa., has become the Wood Works plant of the Irvin Works. Carl M. Nystrom will remain as superintendent. Products produced at Wood Works are principally hot and cold rolled stainless steel sheets.

King Co. Consolidates

Alfred B. King Co. and its subsidiaries, Churchward Welding Accessories and KIF Industrial Fabricators, has completed a plant expansion and consolidation program by moving into a 10,000 square foot plant in North Haven, Conn. A 2200-square-foot office building and a 3000-square-foot warehouse are included. Enlargement of the Materials Handling Manufacturing Division is underway.

Wheeling Builds Coke Ovens

A battery of 63 coke ovens of the under-jet fired type and costing $8,750,000 will be built for Wheeling Steel Corp. by Koppers Co., Pittsburgh. To be erected at the East Steubenville, W. Va. Works, the new ovens will boost the company's coke output from 120,000 to 145,000 tons per month. The new installation will consume about 6600 tons of coal per day, most of which will be supplied by corporation-owned mines. Ten steel coal barges on order will haul coal for the new facility.

To Expand Generator Output

An increase in generator output of 65 per cent will result from two new buildings to be built at East Pittsburgh, Pa., works of Westinghouse Electric Corp. Over 300,000 square feet of floor space will be available for making huge high speed power generators larger than any previously built. Some of George Westinghouse's original buildings, erected in 1896, are being demolished for the new structures.

Hotpoint Adds for Air Contract

Aircraft superchargers will be built in an $8 million plant under construction by Hotpoint Inc. in Milwaukee, Wis. Production will begin in October, says James J. Nance, company president. The structure will add 108,000 square feet of factory space to the 500,000 square feet already in use for making home appliances. The cost includes tools and equipment, as well as test cells for the superchargers.

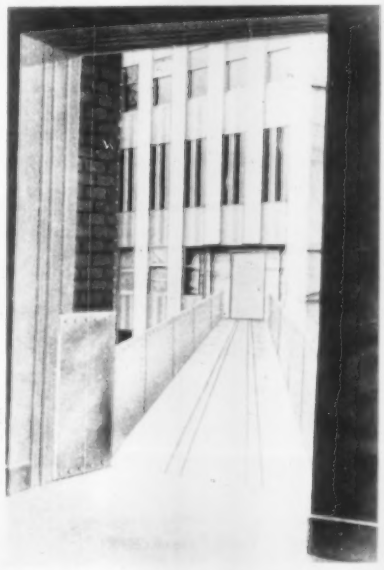
Pacific Can Ups Capacity

Anticipating increased government demands for food containers, Pacific Can Co. is expanding its main plant at San Leandro, Calif. The $1 million program, to be completed in July, will raise annual production to between 800 and 1000 million cans, according to E. F. Euphrat, company president.

Standby machinery and equipment, some from its former plant in San Francisco, will be installed. A $500,000 addition to the Los Angeles can making works is also being considered.

Bridge Replaces Van in U. S. Steel Move

WITH 1200 rooms of heavy office furniture to move "across the street" to its new office, U. S. Steel Co. and its subsidiaries had a ponderous problem. Migration to the new 41-story building, scheduled for spring, was only a short block at street level, but the move was across two busy Pittsburgh streets, making ground-level crossing impractical.



The Shortest Distance

With experience in spanning such gaps as Oakland Bay at San Francisco, American Bridge Co., one of the subsidiaries, proposed a 6-foot wide bridge diagonally above the intersection. By this route it was 101 feet from the present building to the skyscraper.

Central span will be prefabricated at American Bridge's Ambridge, Pa., plant, complete with planking, tracks to guide loaded dollies and 4-foot high side plates. After being raised to falsework towers above trolley cables, the span will be extended to within 4 feet of the buildings, then raised for splicing to trusses on each building.

A slight downgrade from the 12th floor of the old premises to the 14th floor of the new building will aid in rolling equipment over the span. A live load of 100 pounds per square foot can be carried "through the air" to the new headquarters.

Now, more than ever before, America must make full use of its steel-making capacity and conserve its natural resources. Now, more than ever, there is national significance in the phrases, "*Make a ton of sheet steel go farther*" and "*Make your product last longer.*"

These low-alloy, high-tensile steels do "make a ton of sheet steel go farther"—for their inherently higher strength is 50% greater than mild carbon steel. That means, in turn, that 25% less section can be used with safety, and where rigidity is important, this can usually be compensated for through slight design change.

"Make your product last longer" is no idle claim. The much greater resistance of N-A-X HIGH-TENSILE to corrosion, abrasion, and fatigue assures longer lasting products even at reduced thickness.

Explore the potential economies to be derived from the use of low-alloy, high-strength steels—and then specify them. Their use can add materially to our national conservation program.

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division, Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION

PRODUCER OF N-A-X HIGH-TENSILE STEEL

By H. C. TUTTLE *Detroit Editor, STEEL*

Mirrors of Motordom

Detroit may build 6 million autos in 1951, but parts suppliers are doubtful. They're feeling a slump already, and not enough defense work is coming in to take up the slack

DETROIT

GENERAL MOTORS' C. E. Wilson has come to be regarded as the industry's oracle because of his unerring predictions throughout the postwar period. Thus, when he ventures the guess that six million cars and trucks will be turned out this year, the figure acquires a magic quality and will be heard frequently throughout the coming months.

Limited Optimism—High expectations are very largely confined to the auto makers themselves. Their suppliers are by no means so confident that production of civilian vehicles will maintain the pace. A few of these have received releases for 35-40 per cent smaller quantities of the myriad of parts and components they make.

It is these companies, primarily, which are responsible for Detroit's swelling unemployment.

Eyes to the East—There is a concerted effort being made by many suppliers to get into war work with both feet. Mecca of these continues to be Washington, despite the extensive decentralization of government procurement activities. Numerous suppliers to the truck makers are working on military vehicle subcontracts, and aircraft component parts suppliers have military work. In most cases, however, there is a wide gap between the plant capacity so occupied and that idled by the cutbacks in releases. Filling this gap is the major worry of the industry and will be for months to come despite assurances by the military that the automotive industry will play a significant part in the defense effort.

Auto Work Presses Tool Builders

One metalworking segment feeling no worry pangs on the conversion score is the machine tool industry. Booked to capacity for six to twelve months ahead, builders report no letup in pressure from auto makers for new tools, many of them special purpose. Significantly, much of this demand is for new engine production tools. And there are no indications that the defense program will interfere substantially with auto makers' plans in this direction.

Auto Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	732,161	508,101
June	897,856	623,689
July	746,771	604,351
August	842,304	678,092
September	760,808	657,073
October	795,918	601,021
November	632,943	475,454
December	659,222	384,318

Weekly Estimates

Week Ended	1950	1949
Dec. 23	160,912	116,567
Dec. 30	135,229	113,026
	1951	1950
Jan. 6	99,955	116,768
Jan. 13	139,781	154,552
Jan. 20	140,000	158,432

Estimates by Ward's Automotive Reports

* Preliminary.

When Will Chrome Come Off?

If it can be granted that 1951 auto production will be substantial by any prewar standards, there is no doubt whatsoever that many of the 1951 cars will be shorn of a good part of their glitter.

Cars going into showrooms today give no hint as to what's coming, each new model seemingly vying with the others for superiority in the amount of chrome trimming. This contest will soon be ended. Polishing has been cut down to preserve the thinner layers already, and grille, bumper and trim suppliers are seeking a suitable substitute. Each manufacturer is attacking this problem in a different way, but harmonizing or contrasting paint will supplant chrome on much of the trim, even possibly on some bumpers.

ESA's price freeze was responsible for changes in the facial appearance of some new models from that originally planned. This is not noticeable to the casual observer because familiar 1950 details are retained, instead of the dogged-up 1951 trim which the stylists wanted. In some cases this has meant relocation of parking lights to make one piece of chrome do the work of two. Having tooled, then retooled, it seems doubtful that any relief by an ESA formula will bring back into being on 1951 models the trim changes that were to have been part of their distinguishing characteristics.

Chrysler Introduces V-8 Engine

Does the word "FirePower" have any special meaning to you? It will when Chrysler Corp. culminates its intensive "teaser" advertising campaign. The word is being used to describe the completely new 180-hp V-8 engine which will make its appearance on the 1951 Chrysler New Yorker and Imperial models.

The engine is the feature attraction (displayed to the press last week) in a line up of innovations, including power steering, air-cooled brakes and a new torque converter.

Work on the FirePower engine has been going on for five years with the goal being better fuel utilization in combustion. Secret of the new engine is its hemispherical combustion chamber with overhead lateral valve arrangement incorporated in the design.

This shape, which has presented difficult manufacturing problems, reduces carbon deposits and is responsible, according to company engineers, for the high efficiency. Compared with the 1950 Chrysler eight-cylinder in-line engine, the FirePower unit, with only 2.3 per cent more displacement, has a 33 per cent greater horsepower and 16 per cent greater maximum torque. Total engine weight including the transmission is 8 per cent less.

Fuel economy is boosted because of the engine's high efficiency. Its compression ratio—7.5 to 1—is achieved with regular grade gas. Developing 180 hp and 312 pound-foot gross torque, the engine is said to deliver the highest output per cubic inch of displacement of any production engine.

As an adjunct to the new engine, a specially designed torque converter in conjunction with controlled-type automatic transmission will be offered. A four-element type with the impeller and turbine consisting of hydrogen-brazed, stamped steel assemblies and the two stators of cast aluminum, the torque converter permits

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nearly all driving to be done in the high range. Low ranges are obtainable for engine braking and push starts.

Hydraguide—the power steering mechanism—will be available also on New Yorkers and Imperials as optional equipment. A development of Gemmer Mfg. Co., this device is a combination of hydraulic-mechanical steering. It reduces by 90 per cent the physical effort required in steering, making it possible to turn the wheels with the pressure of one finger while the car is moving or stationary.

All Chrysler-built passenger cars this year incorporate "Oriflow" shock absorbers. Through a new method of controlling fluid flow within the absorber a gradual change of resistance to spring deflection is provided. Its ten fewer parts than previous design make it easier to assemble and less expensive to manufacture.

The Oriflow shock absorber is getting major emphasis at the retail level, with dealers around the country mapping out routes which will include smooth, medium rough and very rough stretches for their prospects to drive over.

Dodge Offers 1951 Models

Second Chrysler division to bring out 1951 models is Dodge; its line went on display Saturday.

Completely new treatment of the front end is featured, with the massiveness of bumper and bumper guards and an in-sloping top grille member being prominent. Lines of the hood and front fenders have been changed, one byproduct being improved driver view of the road in front. To further improve visibility, width of the front corner posts has been reduced and the glass widened by 2½ inches. On all models the rear window has also been widened, and lowered in the case of the Wayfarer two-door sedan and business coupe.

Instrument panel is finished in non-reflecting paint and trim. Interior is completely restyled.

Mechanically, the Dodge has been improved with a new parking brake on Gyro-matic equipped cars, more effective use of rubber insulation in both body and chassis, change in cooling system involving a permanent by-pass and six-blade pump impeller, a narrower V-type fan belt for quiet operation, increased generator capacity and electric windshield wipers on all models.

Gyro-matic transmission, which last year was obtainable only on cars in the Coronet series, this year will be optional on three lower-priced models —the Meadowbrook four-door sedan, Wayfarer two-door and Wayfarer three-passenger coupe. Originally it was believed that this shift-less transmission would be standard on all Dodge cars, but present production capacity is incapable of meeting demand for the unit. Gyro-matic is a fluid coupling and hydraulically operated electrically controlled gear shift mechanism that is semiautomatic in operation.

An entirely new body type—the Sierra—is introduced in the Coronet series. This has the body line and function of a station wagon and features all-steel construction.

Others Bring New Entries

Three other companies this week introduced new models—Kaiser Frazer, Lincoln and Buick.

The Kaiser line added four models of Traveler sedans, combining features of conventional sedans and station wagons.

With rear panel open and tailgate extended, a floor area of 108 by 46 inches is provided for a cargo capacity of 105½ cubic feet.

Customized version of the Lincoln Cosmopolitan six-passenger coupe has gone into limited production again after its first introduction in 1950 as the Capri. This design has a Vinyl covered steel top which produces a textured effect and individuality not matched by conventional Lincoln models.

A completely new Special line with new chassis, body and engine highlights Buick's 1951 models. Powering this car is the F-263 engine which was introduced last year in the Super series.

Of valve-in-head straight-eight type, this engine has a compression ratio of 7.2 to 1, and develops 128 horsepower when designed for use with the Dynaflow transmission, optional equipment on the Special and Super.

With conventional transmission, compression ratio of the engine is 6.6 to 1 and it develops 120 horsepower, an increase of 5 horsepower from the 1950 special engine. Displacement of the engine is 263 cubic inches as compared with 248 cubic inches last year. Gain in displacement results from a 3/32-inch increase in bore in the power plant.

In the Super this engine develops 124 horsepower with a ratio of 6.9 to 1 when equipped with conventional transmission, 7.2 to 1 with Dynaflow. The Roadmaster series engine with compression ratio of 7.2 to 1 and 152 horsepower is continued on this new model.

The new Special's power plant is more compact than the 1950 design and makes use of shorter connecting rods and shorter pistons.

A completely new chassis frame was developed to give the car rigidity. The Riviera hard-top body has been added to the Special series this year to provide this body design in all series. A convertible is also available in the Special line for the first time since this model was resumed after the war.

SWEEPSPEAR MOLDING: This 1951 Buick Special gets the sweeping side trim and other revised design features to distinguish it from 1950 models. The front end is redesigned and the car has a new chassis. For the first time, Buick's F-263 engine is offered in the Special series, delivering 128 horsepower with Dynaflow drive

The Business Trend

Industrial production, recovering from customary yearend slackening, is on the upgrade for the first time since a month ago. Steel output at new high level

INDUSTRIAL activity is on the upgrade for the first time since a month ago when the customary yearend slackening set in. The upturn pushed up STEEL's industrial production index in the week ended Jan. 13 to 211 per cent of the 1936-1939 weekly average. This is a 19-point rise over the week ended Jan. 6. Before the yearend downturn began, the index had ascended to 218 per cent in the week ended Dec. 16. High point for 1950 was 222 per cent in the last two weeks of October.

All components in STEEL's index showed increases in the week ended Jan. 13. Steel ingot production, at 1,980,800 net tons, was at the highest level since mid-November, and it was expected to rise in the week ended Jan. 20 to an alltime high of 1,991,000 tons. The steel industry, which attained a new high level of production in 1950 by turning out 96,713,276 net tons of steel for ingots and castings, is now in position to set even higher records, for its capacity has reached a record high of 104,229,650 tons. More new capacity is abuilding. The steel industry's blast furnace capacity is also at a record high level, 72,471,780 tons.

Auto Output Should Rise . . .

Automobile output regained some of its momentum in the week ended Jan. 13 with the assembly of 139,781 passenger cars and trucks in the United States and Canada. In the week ended Jan. 6, only 99,955 units were produced. Output will continue to increase, for model changeovers were preventing the industry from operating to the limit of its supplies during the week ended Jan. 13.

More Trains Coming . . .

Railroad freight car loadings, at an estimated 765,000 for the week ended Jan. 13, reflected the recovery of industry from the yearend slackening. The brisk industrial pace that is expected to result from the defense program will boost freight car loadings in the first quarter of this year 16.5 per cent over those of the first quarter of 1950, estimates from the 13 Regional Shippers Advisory Boards indicate.

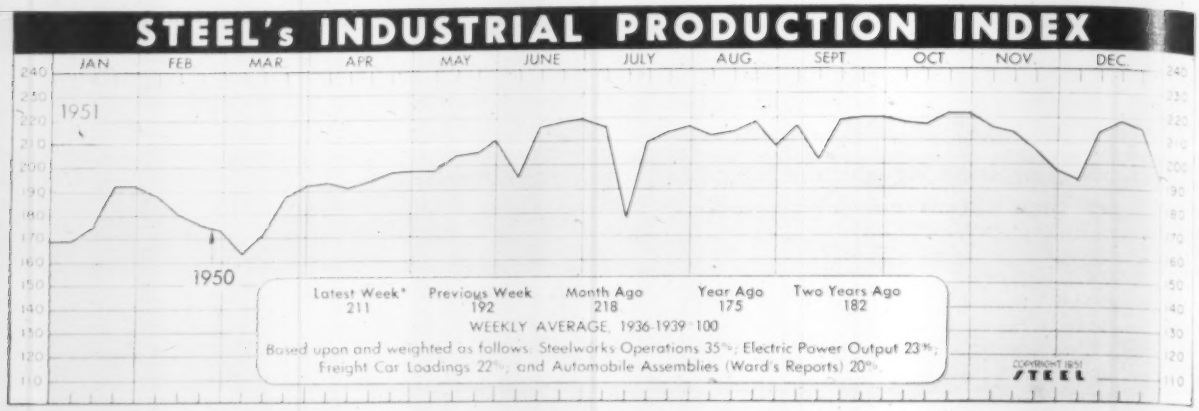
This increased business on the railroads and the rising requirements of national rearmament are inspiring the carriers to continue in 1951 the billion-dollar-a-year program of expansion and improvement which has marked the last five years. They entered the year with 124,489 freight cars on order for addition to the 43,991 they put into service in 1950. The 156,481 new freight cars ordered in 1950 made the largest number booked in any year since 1922. Deliveries are expected to increase gradually during the first quarter of 1951 and may reach a 10,000-a-month level by April or May, the American Railway Car Institute says.

The railroads have on order more than 2000 units of new motive power to be added to the approximately 3000 installed in 1950.

With more and larger cars and with locomotives which total 7 per cent more in pulling power and average almost 25 per cent higher in

BAROMETERS of BUSINESS

		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	99.0	98.0	101.5	94.0
	Electric Power Distributed (million kilowatt hours)	6,981	6,602	6,985	6,029
	Bituminous Coal Production (daily av.—1000 tons)	1,675	1,517	1,903	942
	Petroleum Production (daily av.—1000 bbl)	5,762	5,788	5,723	4,926
	Construction Volume (ENR—Unit $1,000,000)	$415.8	$154.2	$136.5	$193.4
	Automobile and Truck Output (Ward's—number units)	139,781	99,955	172,307	154,552
	*Dates on request. †1951 weekly capacity is 1,999,035 net tons. 1950 weekly capacity was 1,928,721 net tons.				
TRADE	Freight Car Loadings (unit—1000 cars)	765†	662	773	631
	Business Failures (Dun & Bradstreet, number)	193	144	150	207
	Money in Circulation (in millions of dollars)‡	$27,415	$27,685	$27,759	$27,311
	Department Store Sales (changes from like wk. a yr. ago.)‡	+39%	+20%	+2%	−25%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$17,198	$17,923	$16,035	$13,907
	Federal Gross Debt (billions)	$256.0	$256.2	$257.0	$256.9
	Bond Volume, NYSE (millions)	$27.2	$20.9	$25.0	$37.0
	Stocks Sales, NYSE (thousands of shares)	17,362	14,351	13,856	14,799
	Loans and Investments (billions)†	$71.2	$71.8	$69.8	$67.2
	United States Gov't. Obligations Held (millions)†	$33,296	$33,674	$32,924	$37,514
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	171.92	171.92	167.89	156.13
	STEEL's Nonferrous Metal Price Index‡	255.8	248.7	243.0	161.2
	All Commodities†	177.9	176.8	173.6	151.8
	Metals and Metal Products†	187.9	187.4	185.1	168.6
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1951
1950
Latest Week* 211
Previous Week 192
Month Ago 218
Year Ago 175
Two Years Ago 182
WEEKLY AVERAGE, 1936-1939=100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
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Week Ended Jan. 13

tractive effort, railroads have greater carrying capacity than they had at the time of Pearl Harbor.

Work Weeks Lengthened . . .

To take on defense production assignments in addition to keeping up civilian output, some establishments, especially in the metalworking industries have increased hours of work to 45, 48 and even above 50 a week, the U. S. Department of Labor reports. In a few scattered instances employers are operating on a two or three shift basis.

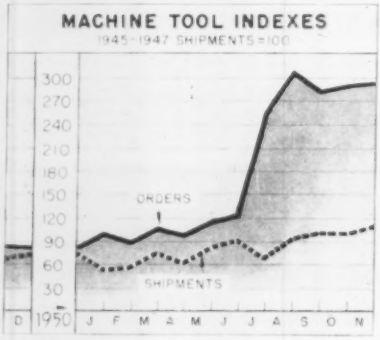
These conditions have prompted the relaxation of hiring specifications in some instances, especially in regard to maximum age limits, but by and large hiring standards are being maintained at accustomed levels, the department says.

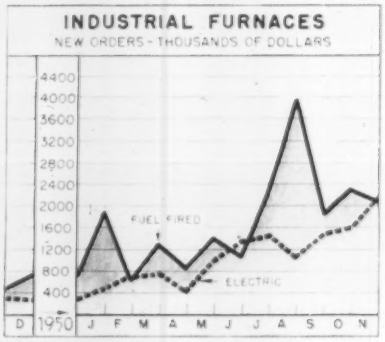
Less Laundry Equipment . . .

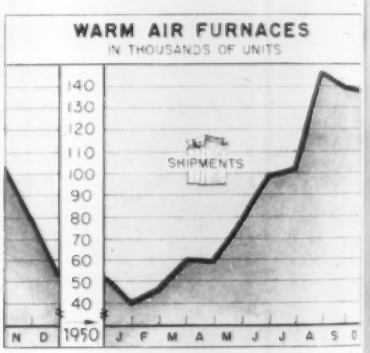
As the jaws of mobilization clamp down on civilian activities the factory output of household laundering equipment will fall in the first quarter of 1951 to about 20 per cent under that of the corresponding period of last year. That's the forecast by George P. Castner, new president of the American Home Laundry Manufacturers' Association. Many new alltime highs were set in home laundry equipment production in 1950.

New High for Prices . . .

Like a giant hurricane, inflation continues to sweep forward. In doing so, it pushed the all-commodities wholesale price index of the U. S. Bureau of Labor Statistics in the week ended Jan. 9 to a new alltime high of 177.9 per cent of the 1926 average. That was a 1.1-point increase over the week ended Jan. 2. The new record is 2.5 per cent above four weeks ago, 13.4 per cent above the May 24-June 24 average and 17.2 per cent above one year ago. All







Machine Tool Indexes

	New Orders		Shipments	
	1950	1949	1950	1949
Jan.	99.7	87.0	52.8	68.8
Feb.	89.2	80.9	56.1	70.3
Mar.	107.4	93.5	75.3	75.8
Apr.	98.9	70.1	61.6	74.7
May	116.4	63.7	82.5	72.8
June	124.1	53.6	91.9	79.0
July	253.1	48.0	68.3	60.7
Aug.	305.1	51.5	95.7	67.3
Sept.	280.6	57.7	101.6	67.6
Oct.	289.6	56.8	100.9	62.3
Nov.	292.7	84.3	110.9	67.6
Dec.	....	82.5	....	75.7

National Machine Tool Builders' Assoc.

Industrial Furnaces

New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1950	1949	1950	1949
Jan.	1,914	1,047	473	948
Feb.	616	636	697	402
Mar.	1,300	305	753	436
Apr.	837	322	415	543
May	1,392	438	982	762
June	1,166	1,978	1,328	196
July	2,247	594	1,445	329
Aug.	3,927	706	1,039	589
Sept.	1,817	589	1,485	318
Oct.	2,306	269	1,603	565
Nov.	2,068	464	2,157	293
Dec.	....	718	....	281

* Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.

Warm Air Furnaces

Shipments in Units

	1950	1949	1948
Jan.	39,887	31,734	46,558
Feb.	45,618	33,011	36,345
Mar.	59,982	41,271	39,295
Apr.	58,798	34,471	45,597
May	78,349	42,406	55,473
June	98,517	55,916	64,724
July	102,189	48,575	57,292
Aug.	145,512	85,320	92,611
Sept.	139,014	112,264	103,566
Oct.	137,915	103,401	107,024
Nov.	.....	79,280	77,498
Dec.	.....	52,323	51,163
Total	.....	719,972	776,648

U. S. Bureau of the Census

Charts—Copyright 1951, STEEL

major commodity groups advanced with the exception of fuel and lighting materials.

Business Failures Increase . . .

Commercial and industrial failures, rising to 193 in the week ended Jan. 11, were the highest since last August. Despite this increase, failures continued well below the comparable prewar level.

Cash Dividend Payments Up . . .

Cash dividend payments of United States corporations issuing public reports totaled $232 million in November, 1950, up one-fifth from the $190 million paid out in November, 1949, the U. S. Office of Business Economics reports.

Half of the $42-million increase from a year ago was accounted for by manufacturing, where all subgroups reported gains.

For the three months ended November, 1950, publicly reported dividend payments aggregated $1874 million, more than a third above the $1377 million disbursed in the corresponding period of the previous year. A principal factor in the sharp stepup in the rate of dividend disbursements in the September-November period was the swelling of the September, 1950, total by special payments.

For the first 11 months of 1950, the dividend disbursements of corporations making public reports totaled $5744 million, compared with $4971 million paid out in the corresponding period of 1949.

Personal Income Rises . . .

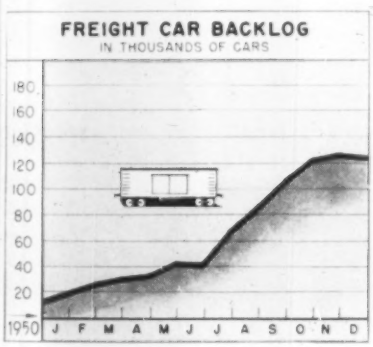
Personal income also showed increases in November. That month it was at an annual rate of $231.9 billion, compared with $231.1 billion in October, says the U. S. Office of Business Economics.

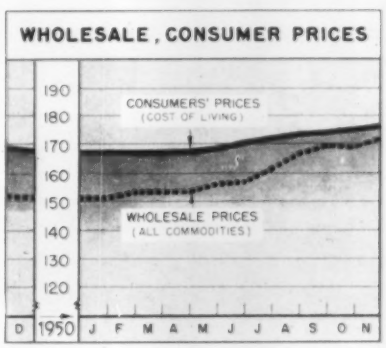
The rise in November, however, was not as rapid as in the previous five months.

Personal income for the first 11 months of 1950 was at an annual rate of $221 billion—$15 billion higher than in the like period of 1949.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction ..... Dec. 25	Ironers ..... Jan. 15	Refrigerators ..... Jan. 15
Durable Goods ..... Nov. 27	Malleable Cast. ..... Dec. 18	Steel Castings ..... Nov. 20
Employ., Steel ..... Dec. 25	Metalwkg. Employ. Jan. 8	Steel Forgings ..... Nov. 20
Fab. Structural Steel Jan. 8	Pumps, New Orders Jan. 8	Steel Shipments ..... Dec. 25
Foundry Equip. ..... Dec. 18	Purchasing Power.. Dec. 11	Vacuum Cleaners .. Jan. 15
Gear Sales ..... Jan. 8	Radio, TV ..... Aug. 14	Wages, Metalwkg.. Nov. 27
Gray Iron Castings Jan. 8	Ranges, Elec. ..... Dec. 4	Washers ..... Jan. 15
Indus. Produc. ..... Jan. 15	Ranges, Gas ..... Dec. 4	Water Heaters ..... Dec. 25





Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1950	1949	1950	1949
Jan.	9,366	1,663	19,026	96,214
Feb.	9,075	332	26,055	85,974
Mar.	6,201	209	30,539	73,188
Apr.	3,308	30	32,857	52,569
May	11,636	589	42,300	52,281
June	2,695	153	40,585	42,813
July	30,065	408	67,084	36,564
Aug.	24,255	185	86,156	28,731
Sept.	25,611	123	106,611	22,203
Oct.	21,893	201	122,148	17,377
Nov.	10,573	1,145	126,870	14,146
Dec.	3,326	1,220	124,489	12,036
Total	6,258		*End of month	

American Railway Car Institute

Price Indexes

	Wholesale (1926=100)		Consumers (1935-39=100)	
	1950	1949	1950	1949
Jan.	151.5	160.6	166.9	170.9
Feb.	152.7	158.1	166.5	169.0
Mar.	152.7	158.4	167.0	169.5
Apr.	152.9	156.9	167.3	169.7
May	155.9	155.7	168.6	169.2
June	157.3	154.5	170.2	169.6
July	162.9	153.5	172.5	168.5
Aug.	166.4	152.9	173.0	168.8
Sept.	169.5	153.6	173.8	169.6
Oct.	169.1	152.2	174.8	168.5
Nov.	171.6	151.6	175.6	168.6
Dec.	....	151.3	....	167.5
Average	....	154.9	....	169.1

U. S. Bureau of Labor Statistics

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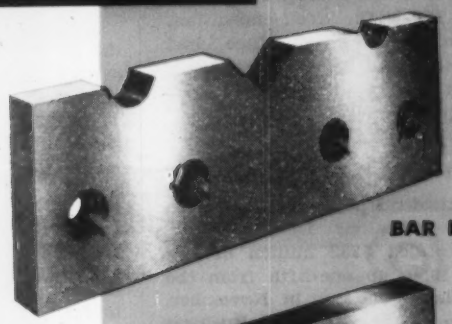
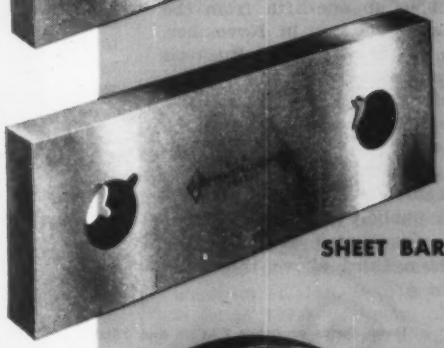
If you're not using them, don't be satisfied with the "average service" you think you're getting with your present knives. Specify Heppenstall Knives . . . and honestly, you'll be surprised at the difference!

Long-time users know that Heppenstall Knives, made from our own electric induction steels, are the finest knives obtainable. They consistently deliver greater tonnage per edge . . . more and cleaner cuts per grind . . . per knife . . . and per dollar of original cost. Why not order a set today?

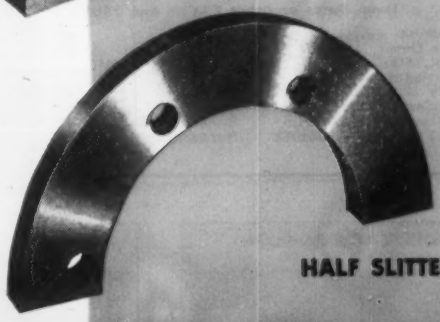
Heppenstall Company, Pittsburgh 1, Pa.
Sales Offices in Principal Cities.



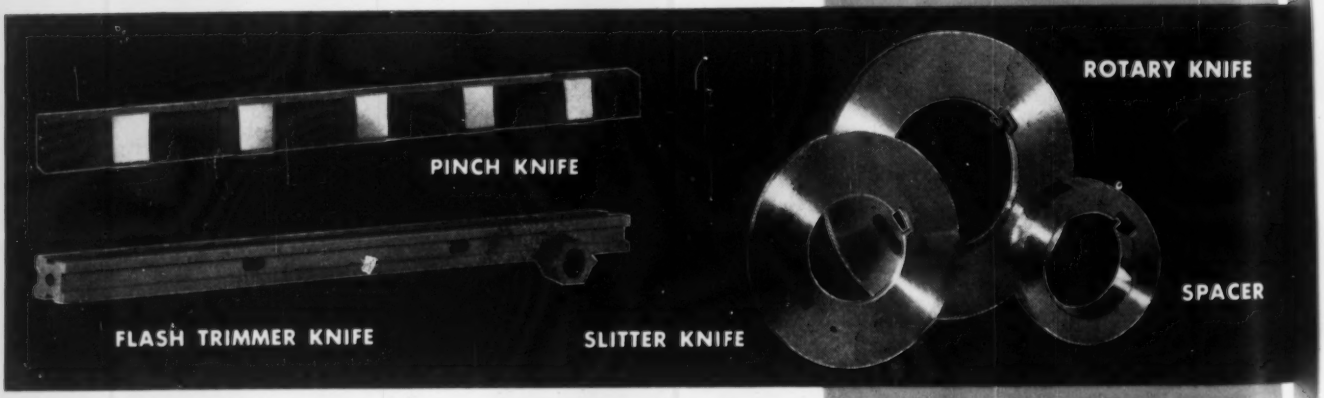
BAR KNIFE



SHEET BAR KNIFE

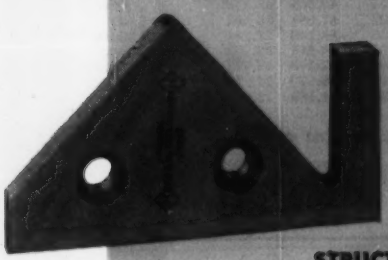


HALF SLITTER



Heppenstall

-The most dependable name in forgings...



STRUCTURAL KNIFE

Men of Industry

NORMAN F. SMITH
. . . new president, Osborn Mfg.

JOHN C. KOCH
. . . V. P. of sales at Conoflow

W. R. PERSONS
. . . V. P. of sales at Lincoln Electric

Norman F. Smith, vice president and general manager, **Osborn Mfg. Co.,** Cleveland, was elected president. **Franklin G. Smith,** founder and president since 1892, was elected chairman of the board.

H. S. Geneen was elected controller, **Jones & Laughlin Steel Corp.,** Pittsburgh. **W. H. Dupka,** formerly vice president and controller, continues as vice president and as a director, and will act as special consultant to the chairman of the board and president. **Nils P. Johnson** succeeds Mr. Geneen as assistant to vice president-general services.

Ford Motor Co., Dearborn, Mich., named as vice presidents **Logan C. Miller** and **Ray H. Sullivan** in charge, respectively, of the basic products group and engine and pressed steel group, both newly formed groups of manufacturing divisions. What formerly was designated as the general manufacturing group at Ford and headed by Vice President **John Dykstra,** has been renamed the aircraft engine, tractor and machined product group. Mr. Dykstra remains in charge.

William K. Honan was appointed a regional manager of **All-State Welding Alloys Co. Inc.,** White Plains, N. Y., in charge of sales and service in New England, New York north of Westchester county, western Pennsylvania and Ohio.

William F. Weinreich was promoted to assistant to the vice president, and in charge of the newly acquired Oil City, Pa., plant of **Worthington Pump & Machinery Corp.**

John C. Koch was appointed vice president-sales, **Conoflow Corp.,** Philadelphia. He joined the company in 1945 and has been general sales manager in Philadelphia.

Otto Hecht was named production manager, **Laminated Shim Co. Inc.,** Glenbrook, Conn.

Albert J. Berdis was appointed general superintendent, Fairless Works, **United States Steel Co.,** Pittsburgh. He will manage operations of the new, wholly-integrated mill to be built along the banks of the Delaware river near Morrisville, Pa. **John G. Munson,** since 1939 vice president-raw materials of the former U. S. Steel Corp. of Delaware, has retired.

Carl J. Meister was appointed vice president and director of sales, **Atlas Chain & Mfg. Co.,** Philadelphia. He will also serve as director of sales for Atlas Metal Stamping Co.

A. E. McIntyre was elected president, and **Walter Taylor,** vice president of **Malsbary Mfg. Co.,** Oakland, Calif.

E. H. Pritchard, vice president, **Western Materials Co.,** Chicago, was elected president to succeed the late **Noah H. Jacobsen.**

Babcock & Wilcox Co., New York, elected **Frank E. Hutton** executive assistant, in charge of application and sales of process equipment for the pulp and paper industry in addition to sales of process equipment and alloy castings generally, and of pulverizers for cement, metallurgical and special applications.

W. R. Persons was elected vice president-sales, **Lincoln Electric Co.,** Cleveland. He has been general sales manager since 1946.

R. K. Warren was appointed assistant manager of tool steel sales for **Crucible Steel Co. of America,** New York. He will have headquarters in Syracuse, N. Y., where Crucible's tool steel production and sales activities are centered in the Sanderson-Halcomb Works. **Ira G. Sutton** was appointed general superintendent of the works, succeeding Mr. Warren.

George T. Fraser was appointed manager of sales, **Rem-Cru Titanium Inc.,** Bridgeport, Conn. He was assistant manager of tool steel sales, Crucible Steel Co. of America, at Syracuse, N. Y.

S. B. Heppenstall Jr. was elected vice president-sales, **American Forge & Mfg. Co.,** Pittsburgh. In 1945 he resigned as sales vice president, Heppenstall, to assume a similar position with H. K. Porter Co. More recently he has been president of Pittsburgh Carbon Inc. and Artwood Exhibits Inc. and continues to head these concerns.

C. S. Beattie was appointed executive vice president and general manager, and **R. E. Anderson** as senior vice president, **Delta-Star Electric Co.,** division of H. K. Porter Co. Inc., Pittsburgh.

Thomas W. Russell Jr. was appointed assistant general purchasing agent, **American Brake Shoe Co.,** New York.

Roger H. Van Horne was appointed assistant general superintendent, **Gen-**

FRANK W. JARVIS
. . . president of Diamond Magnesium

DR. MAURICE NELLES
. . . directs engineering develop., Borg-Warner

H. THOMAS HALLOWELL JR.
. . . Standard Pressed Steel president

eral Abrasive Co., Niagara Falls, N. Y.

Frank W. Jarvis was elected president of **Diamond Magnesium Co.**, Painesville, O., subsidiary of Diamond Alkali Co. This former government-owned magnesium plant is being reactivated for the national military-preparedness production program, and work is scheduled for completion by Apr. 1. Mr. Jarvis has resigned both as president and as a director of Fairport, Painesville & Eastern Railroad, and within a short time will have his office at the magnesium plant. He joined Diamond Alkali in 1932. In 1943 he joined the railroad management staff.

J. Richardson Dilworth was elected to the board of directors, **Rockwell Mfg. Co.**, Pittsburgh.

Albert Walton was named general manager of manufacturing, **Budd Co.**, Philadelphia. He was plant manager of the Charlevoix plant in Detroit. In his new position he assists **Ernest R. Schmidt**, vice president.

Dr. Maurice Nelles was appointed director of **Borg-Warner Corp.'s** engineering development section at Bellwood, Ill. He previously was director of the engineering experimental station and professor of engineering research at Pennsylvania State College.

R. H. Wright was named general superintendent, **Atlantic Steel Co.**, Atlanta. **R. E. Bobbitt** is superintendent of maintenance, and **W. R. Potts**, chief engineer.

Arthur L. Morrison was appointed purchasing agent, **Weston Electrical Instrument Corp.**, Newark, N. J., to succeed **George T. Deaney** who was made war activities co-ordinator.

James R. Hitt was appointed manager of the Newark, N. J., factory branch, **Trailmobile Co.**

Mark M. Biddison was made executive vice president, General Chemical Division, **Allied Chemical & Dye Corp.**, New York. He has been vice president since 1947.

H. Thomas Hallowell Jr. was elected president, **Standard Pressed Steel Co.**, Jenkintown, Pa., to succeed **H. T. Hallowell Sr.** who becomes chairman of the board. Other changes include: **Harold F. Gade**, co-founder of the company and present treasurer, given the additional title of senior vice president; **J. Whiting Friel**, sales manager, made vice president-sales; and **William I. Kryder** who becomes secretary to succeed **Ralph S. Mast**, retired.

William L. Hunter, general manager, was named vice president and general manager, Northern Equipment Division, **Continental Foundry & Machine Co.**, Erie, Pa.

Baker, Jones, Hausauer Inc., Buffalo, recently opened an office in Pittsburgh, 119 Fifth Ave., Room 302, and placed **L. K. Scott** in charge.

L. V. Johnson, assistant chief engineer, **National Tube Co.**, Pittsburgh, subsidiary, U. S. Steel Corp., was promoted to chief engineer to assume duties until recently handled by **John**

ALBERT WALTON
. . . Budd Co. gen. mgr.-manufacturing

MARK M. BIDDISON
. . . General Chemical's exec. V. P.

L. V. JOHNSON
. . . chief engineer, National Tube

L. Young, elected vice president-chief engineer of the newly formed United States Steel Co.

Carl C. Nelson, director of purchases for the last 20 years at **Walker Mfg. Co.**, Racine, Wis., was elected a vice president. **T. Faxon Hall,** manager of advertising, sales promotion and public relations, was also elected a vice president, as was **William C. Morgan,** original equipment sales manager who continues in charge of Walker's sales to car factories using Walker silencers, jacks and filters as original equipment on their cars. Mr. Morgan's headquarters are at Jackson, Mich.

Alexander H. Gaal, merchandising manager, **Earl M. Jorgenson Co.,** Los Angeles, was elected vice president.

James V. Carmichael was elected vice president, **Lockheed Aircraft Corp., Burbank, Calif.** He will be general manager, Marietta, Ga., bomber plant reopened by Lockheed. **D. J. Houghton** is assistant general manager.

John E. Schroeder was appointed manager of the newly established materials department of **Remington Corp.'s** air conditioning division at Auburn, N. Y. He was purchasing agent, C. C. Bradley & Son Inc.

Norman Jones was appointed Seattle sales manager for **A. M. Castle & Co.,** succeeding the late **R. N. Van Der Vert.**

Appointments at **Koppers Co. Inc.,** Pittsburgh, include: **H. J. Henke,** named superintendent, East St. Louis, Ill., bitumastic protective coatings plant; and **Edward Salner,** named manager, precipitator department, metal products division.

R. E. Lucey and **H. C. Rooks** were elected vice presidents of **Trane Co.,** La Crosse, Wis. **E. A. Cline** was named sales manager and is succeeded by **R. E. Haskins** as manager of convector-radiator sales.

JOHN W. BELANGER
. . . mgr., GE's large apparatus div.s

NICHOLAS M. DuCHEMIN
. . . mgr., GE's small apparatus div.s

John W. Belanger and **Nicholas M. DuChemin** were named general managers, large apparatus divisions and small apparatus divisions, respectively, of General Electric Co.'s apparatus department, Schenectady, N. Y.

Harold Reagan was appointed general superintendent, Niagara Falls, N. Y., plant, Electro Metallurgical Division, **Union Carbide & Carbon Corp.**

C. B. Kershner was appointed purchasing agent, **Birdsboro Steel Foundry & Machine Co.,** Birdsboro, Pa.

Preco Inc., Los Angeles, elected **Herbert J. Wieden,** president; **Clarence R. Nissen,** executive vice president, secretary-treasurer; **Ed Zuchelli,** vice president-sales; **Paul K. Beemer,** vice president-engineering; **L. Fort Etter,** vice president-production. Mr. Wieden succeeds **Cortlandt T. Hill,** now chairman of the board.

Mahlon M. Matchett was appointed sales engineer, **Illinois Tool Works,** Chicago, with headquarters in Detroit.

David S. McNally was appointed manager of the recently consolidated service parts warehouse and central inventory control of **Packard Motor Car Co.,** Detroit. He succeeds **R. L. Van Valkenburg,** now Detroit zone warehouse manager.

Donald B. Harris was named technical assistant to the president of **Airborne Instruments Laboratory,** Mineola, N. Y.

Williams & Co. Inc., Pittsburgh, appointed **A. M. Turner** assistant treasurer, **W. S. Risher** as manager of the nickel alloys department, and **G. E. Pickett** as manager of the stainless steel department.

A. G. Hendrickson joined **A. O. Smith Corp.,** Milwaukee, as welding equipment sales manager.

Ray E. Kalmbach was named general manager, **Wilson Foundry & Machine Co.,** subsidiary of Willys-Overland Motors Inc., at Pontiac, Mich., succeeding **Maj. Gen. George D. Pense,** resigned.

Thomas F. Lane was appointed plant superintendent, **Buch Mfg. Co.,** Elizabethtown, Pa. **Lee M. Garber** was promoted to purchasing agent and will have charge of all procurement.

S. S. Wolff, formerly chief engineer, Century Electric Co., has resigned to join **American Safety Table Co.,** Reading, Pa., in the same capacity.

OBITUARIES..

Harry Hanson, 65, vice president and secretary, **Griffin Wheel Co.,** Chicago, died Jan. 12 following a stroke.

John Avery, president of **Roots-Connersville Blower Corp.,** Connersville, Ind., died of a heart attack Jan. 13.

George F. Meyer, 83, president, **F. Meyer & Bro. Co.** and former president, **Meyer Furnace Co.,** both of Peoria, Ill., died Jan. 11.

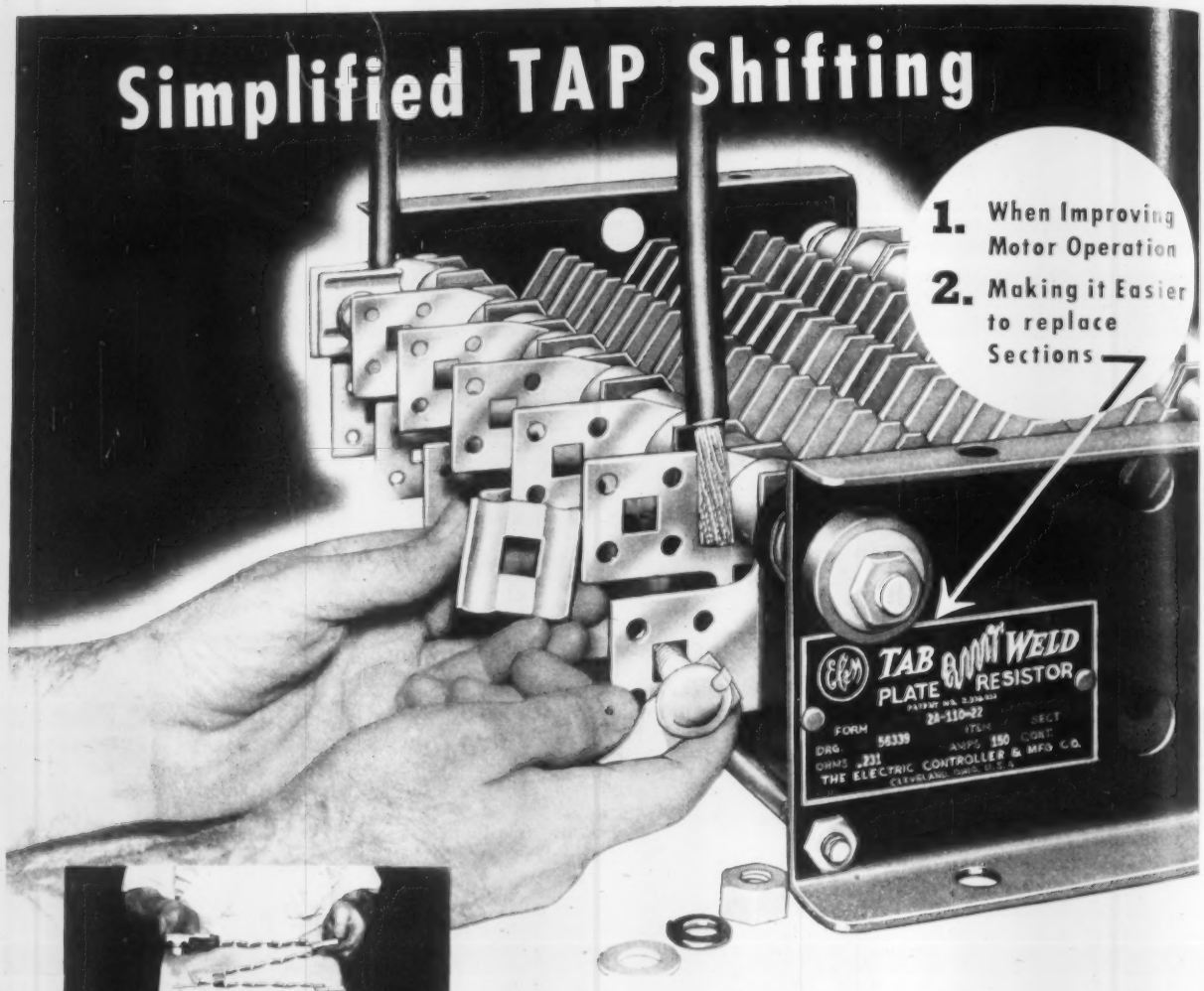
Rear Adm. Clinton E. Braine, 56, assistant to the president, **Crucible Steel Co. of America,** New York, died Jan. 12 of a heart attack.

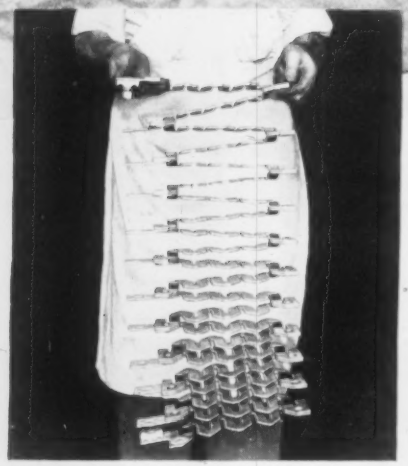
Otto Kramer, 81, founder, **Otto Kramer Brass & Aluminum Foundry,** Milwaukee, died Jan. 7. He was president until retirement in 1947.

Dan D. Williams, Philadelphia district manager, **Whitney Chain Co.,** died Dec. 18.

Lionel M. Stern, 77, chairman of the board, **Colonial Iron Works Co.,** Cleveland, which he founded in 1916, died Jan. 11.

Simplified TAP Shifting


1. When Improving Motor Operation
2. Making it Easier to replace Sections
TAB WELD
PLATE RESISTOR
THE ELECTRIC CONTROLLER & MFG CO.



This illustration shows how welding provides a continuous path throughout each section to:

1. Stabilize the resistance value.
2. Eliminate trouble in concealed areas.

EC&M TAB-WELD Resistors do *not* depend upon *occasional* tightening of end-clamping nuts *to prevent burning at grid-eyes or at tap-plates.*

★ It's often advantageous to shift taps on a resistor section after installation to improve motor performance. It's equally advantageous, when replacing a section out in the mill, to pick a standard section from the storeroom shelf and use it *without disturbing the grid-assembly*.

These operations are easy to perform with EC&M TAB-WELD Resistor Sections because tap-plates are fixed in position. Only the terminal block, bolt, and lead are moved. The tap-marking tag moves with the bolt.

For lower up-keep, prolonged life, and easier maintenance, use EC&M Bulletin 942 TAB-WELD Plate Resistors, made from *corrosion-resistant* steel.

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Production AND Engineering NEWS AT A GLANCE

WEIGHTLIFTER FOR THE MILLS— As flat-rolled steel capacity steps up in the face of a probable manpower pinch, expeditious handling of the product is a must item. Larger and longer coils, running perhaps 30,000 pounds or more, are coming to be the rule and they require heftier crane and truck equipment for intraplant movement. An eastern truck builder has taken the wraps off a new 80,000-pound capacity unit with unusual flexibility which totes heavy coils about swiftly and silently.

CHECKREINS FOR SAFETY— Are safety devices aimed at the protection of machine operators really hitting their beneficiaries "in the pocketbook" by slowing down production? A leading safety expert thinks so (p. 75), and recommends a little re-engineering of machine safety equipment plus a more concerted effort to "resell" its users on the religion of safety.

SALT FOR THE TEETH— Hardening the teeth of slow speed gears for 5-ton hoists without disturbing the finished inside diameter is being accomplished by immersing the finished gears partially in a carburizing salt bath operated at 1525° F for 7 minutes while rotating them at 60 rpm. Teeth are hardened to Rockwell C 50-52 compared with Rockwell C 36 on the original hardened blank. Gears are handled four at a time through the salt being immersed to a depth of 1 inch. Distortion is eliminated and no scaling is encountered since the salt forms a thin protective film around the teeth. The process is likened to "liquid flame hardening".

SPECIALISTS IN WHOOSH— Aeroballistics is a word which has not yet appeared in dictionaries although the science is not new, being actually a combination of aerodynamics and ballistics, both of which treat the motion of objects through the air. With the advent of fast fighter planes traveling at speeds in the 600 mile per hour range, the widely separated areas which hitherto have isolated the aerodynamicist from the ballistician have disappeared, resulting in an exchange of ideas mutually helpful to both sciences. A number of papers on various phases of aeroballistics were presented at a recent symposium sponsored by the Navy's Bureau of Ordnance last November at the University of Texas. One scientist present described wind tunnel tests in which the air flow attained a velocity greater than eight times the speed of sound and about three times the projectile velocities of World War II. The tremendous speed was attained by causing air at considerable pressure to flow through a rectangular nozzle scarcely wider than a thickness of several sheets of paper, into an expanding throat.

DIE POLISHING SIMPLIFIED— Liquid and vapor blasting are abrasive methods finding wider favor. A forge shop, for instance, setting up special cabinet equipment for liquid blasting dies to remove heat treat scale and discoloration, reports it has resulted in a 10 per cent saving (p. 77) in die polishing time. Abrasive particle size may run as fine as 5000 mesh equivalent in precision work, with compressed air furnishing the push for the aqueous blasting solution.

NOW IT'S SHELL MOLDING— The fabulous Croning or "C" process, now the center of considerable buzzing in foundry circles because of the substantial investments being made by several leading manufacturers for its commercial adaptation, has been rechristened with the innocuous identification "shell molding". The new tag springs from the fact that there is or may be some conflict between the original German-developed process and its current U. S. promotion. So now it's just shell molding. Suppliers of phenolic resin binders used in the thin-wall molds, by the way, are sniffing a substantial foundry market for their materials and are stepping up merchandising effort accordingly.

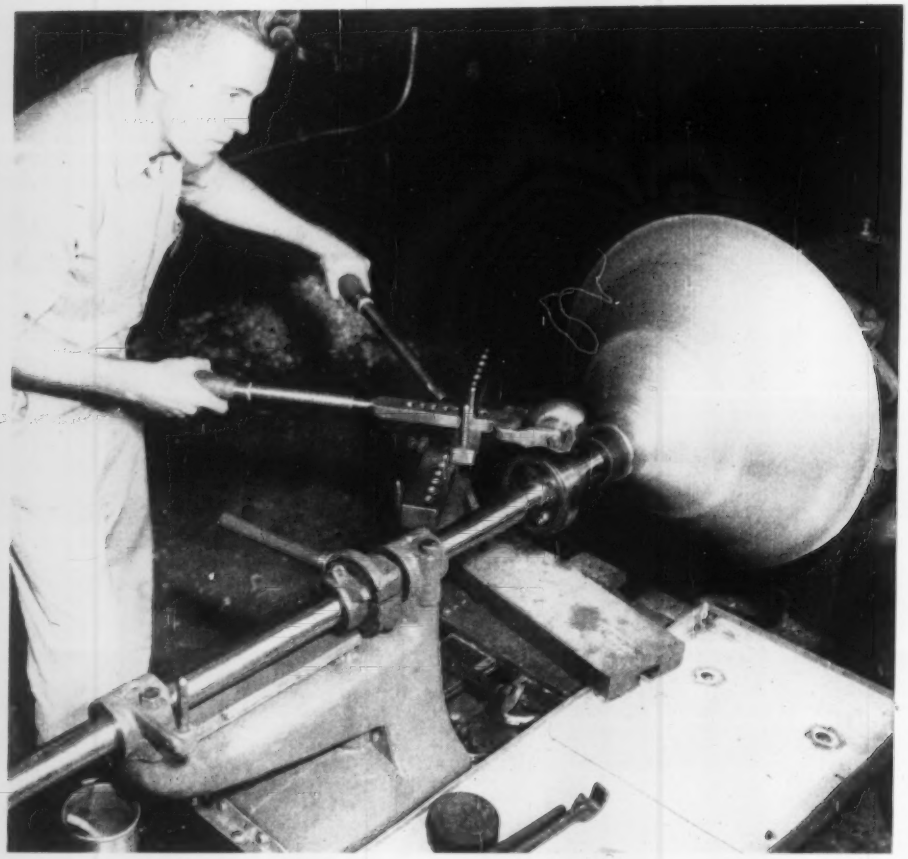
SPINNING BEFORE FORMING— Comparatively ancient technique of metal spinning seems to be having a resurgence of applications. A leading aircraft manufacturer has adapted spinning to the preforming of aluminum alloy blanks prior to drop hammer forming, thereby eliminating (p. 72) some of the multiple staging dies otherwise required. Dozens of parts are handled in this manner, a special department being set up with spinning lathes and conventional wood, steel and carbide spinning tools. Prespinning has also broadened the number of parts which can be hammer formed in one piece, an important economy contribution. Then, in the television tube industry, a spinning process developed in making cream separators has been modified for the spinning of cones for the new metal-and-glass cathode ray tubes (p. 82).

Metalworking Outlook—p. 35 *Market Outlook—p. 109*

SPUN

By GILBERT C. CLOSE

By spinning flat metal sheets into neutral shapes prior to forming, Douglas Aircraft eliminates several sets of expensive multiple staging dies. Metal thickness and distribution can be closely controlled minimizing excessive local thinning and rupture during final hammer forming



Spinning a large neutral shape in the Pryibil spinning lathe. Note obvious displacement of metal under contact of the spinning tool

MULTIPLE staging dies used in critical drop hammer forming work always send costs soaring. This is especially true in short run production where the cost of from five to ten sets of dies may have to be amortized over 50, 100, or even 500 parts. The situation is particularly vicious in the aircraft industry where airplane orders may vary from 10 to 100 planes at a time, with production runs limited accordingly.

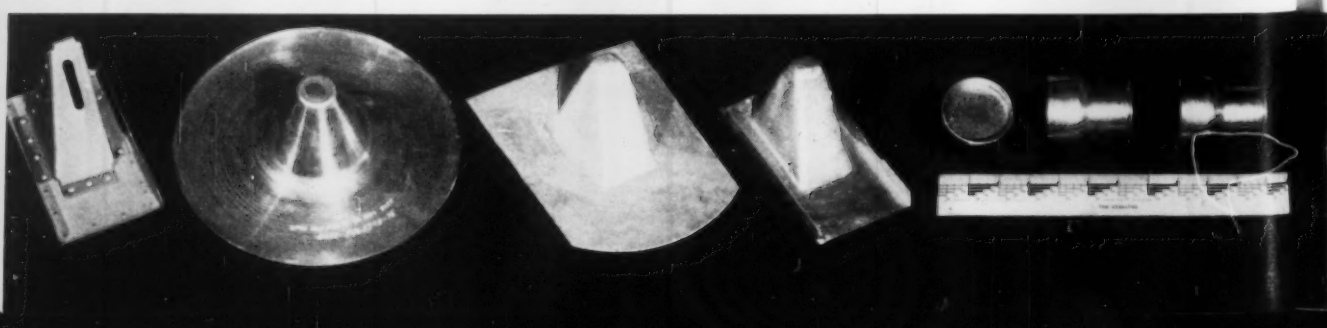
The same high costs prevail in other types of manufacturing where production runs are limited. In the automobile industry, and other industries where productions runs on any specific part may total thousands, this die cost figure is of less importance.

Parts Preshaped—About two years ago engineers at the El Segundo plant of Douglas Aircraft Co. formulated a plan to spin flat metal sheets into neutral shapes prior to drop hammer forming. During this prespinning process, the sheets could be given a shape approaching that of the finished part with the net result that several sets of staging dies could be eliminated during final forming. Furthermore, during this prespinning metal thickness and distribution could be controlled to minimize excessive local thinning and rupture during final hammer forming. Today, dozens of hammer-formed parts used in the company's production airplanes at the El Segundo plant, are transition-stamped from neutral shapes spun prior to hammer forming.

Prior to prespinning, a small aluminum microswitch box required nine sets of drop hammer staging dies to form it in an acceptable manner. Despite this number of dies, many boxes were broken or ruptured during forming due to the deep draw involved.

Switch box as a riveted assembly opposite same box finish-formed by drop hammer from a neutral shape

. . . On left is filler neck well as formed made in two parts. Finish-spun one-piece part is shown at right



NEUTRAL SHAPES

Facilitate Drop Hammer Forming

By prespinning the sheet into a neutral hat shape prior to hammer forming, only three sets of staging dies are required, and distribution of the metal in the prespun shape is so controlled that rupture or breakage during final forming is very rare.

It's Trial and Error—There is no set formula for the shape of the prespun shape; but increasing experience in this type of work is gradually narrowing the range of trial-and-error prespinning that was necessary when the process was inaugurated. At the Douglas plant, the metal spinner and the tooling drop hammer production man work together in developing the right shaped form block for each new part to be produced. In general, two or three trial spinnings followed by transition hammer forming are enough to indicate the best neutral shape to use plus best distribution of the metal to minimize excessive local thinning caused by hammer draw.

In metal spinning, a flat circular sheet of metal is chucked in a spinning lathe along with a wood or metal form block having the desired shape of the spun part. With the sheet rotating, a spinning tool made of either wood or metal is pressed against it opposite the form block. Pressure of the spinning tool causes the metal to "flow"; the flat sheet is gradually forced over the form block and assumes its shape.

An experienced operator can control metal thickness by manipulating the spinning tool to cause the metal to flow back and forth in the part as desired. Thus it is possible to secure thicker sections in portions of the neutral shape that will undergo severe localized draw during subsequent hammer forming.

The term "neutral shape" is used to describe the prespun part because all spun parts are uniformly round and the wall thickness of the part on a given plane is the same throughout the periphery.

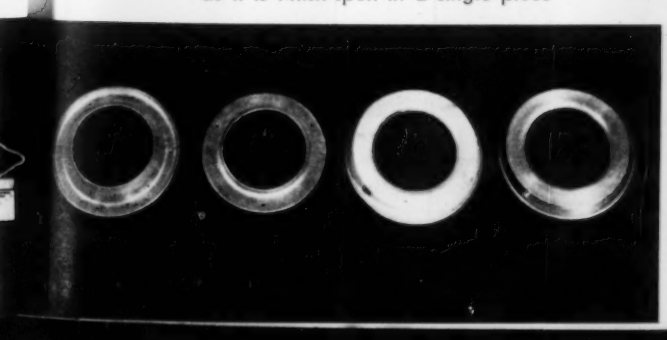
Equipment Simple—An outstanding feature of the Douglas prespinning department is its simplicity and the low cost involved in getting it into operation. One Pryibil spinning lathe with a 22-inch closed bed and 44-inch open bed spins the larger shapes. This machine was modified by equipping it with a three-speed transmission which, in conjunction with a variable drive, provides an infinite variety of speeds between 40 and 1800 rpm. Three ordinary shop lathes prespin smaller parts. Conventional wood, steel and Carboloy spinning tools are used.

The simpler form blocks are fabricated right in the spinning department. Form block material may be birch or maple wood, Masonite, aluminum, Kirksite or steel, dependent upon the severity of the spinning operations and the number of parts to be produced. Masonite (laminated) has been found to be excellent material when the spinning operation is unusually severe, while the long-wearing properties of metal form blocks serve best when a large number of prespun parts must be produced.

Wood is the ideal material for fabricating experimental blocks during the development of the proper

H. W. Snook, responsible for development of the Douglas prespinning practice, demonstrates a neutral shape and the parts into which it is formed by transitional hammer stamping

. . . Retainer ring parts at extreme left and as riveted together third from left. At far right is same ring as it is finish-spun in a single piece



neutral shape. The wood block is easy to modify until just the right shape is obtained.

In some cases, where spinning is carried out to the extremes of straight-walled work, two or three successive breakdowns are necessary, requiring two or three form blocks approaching in degrees the shape of the finished part. When the finished part is of such a shape that the final form block cannot be removed from it, such as a spun shell with a larger center diameter than end opening, sectional form blocks are used that can be taken apart and removed from the shell a section at a time.

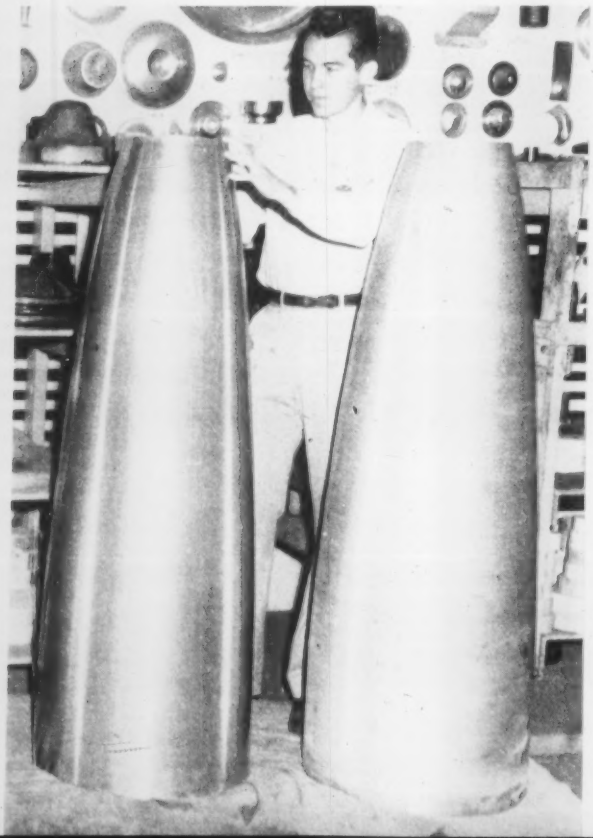
Aluminum Spins Easily—Various aluminum alloys are the most common materials with which the department works. When possible, 61S aluminum alloy in the "O" condition for stressed parts and 3S alloy in the fully annealed condition for unstressed parts, are used. These two alloys spin easily and lie snugly against the form block with very little springback to affect the finished shape.

Other alloys successfully prespun include 24ST, 61ST, 61SW, and 24ST Alclad material. In spinning Alclad, the pure aluminum coating is displaced and the underlying Dural is exposed. The finished part must be surface treated and finished like ordinary Dural sheet. Aluminum sheet material up to 0.128-inch gage has been successfully spun.

Other metal occasionally prespun prior to drop hammer forming (or sometimes spun into finished parts) includes brass, terne plate, and 1025 carbon steel. Experimental hot spinning of FS-la magnesium sheet has been successfully accomplished.

In some cases completed parts not requiring subsequent drop hammer forming are turned out. A large flanged ring used as a slip joint on turbo-jet engine blast tubes is an example. This part, approximately 20 inches in diameter and 6 inches wide, incorporating a protruding flange around the center periphery, is spun from 18-8 stainless steel. Initial gage of the stainless steel is 0.050-inch, but during spinning thickness is reduced to about 0.040-inch due to drawing of metal from flat into cylindrical shape.

A few parts are finish-spun, such as fuel tank sections



Some Spun Parts Annealed—A certain amount of work hardening occurs during the spinning of most metals. The amount of hardening is largely dependent upon the severity of the draw. In some cases, it has been found more practical to anneal partially spun parts before proceeding to the next breakdown. The stainless steel blast tube ring is annealed three times during spinning. Annealing not only removes the hardness caused by working, but minimizes spring back so that the part can be laid more firmly against the form block, making close tolerances possible.

One of the greatest advantages accruing from the prespinning process was the discovery that by prespinning to a neutral shape, many parts could be formed in whole that formerly had to be hammer formed in sections, then fabricated by riveting or welding. The breakdown and metal distribution accomplished during prespinning made it possible to finish parts by drop hammer forming that could not previously be completely hammer formed regardless of the number of staging dies used. One such part, currently in production, is a bomb rack fairing nose for the AD-4 Skyraider airplane.

Prior to prespinning, this part had to be formed in two sections then joined by welding. Now a spun neutral shape is used as the fairing nose.

This not only eliminates welding, but results in a part that is stronger physically and more aerodynamically clean. Distribution of the metal in the neutral shape, accomplished during spinning, offsets the severity of localized draws that made it impossible to hammer form the parts from flat sheet. Other parts now produced by prespinning and hammer forming were formerly riveted assemblies.

Fewer Shrinkage Wrinkles—Another advantage resulting from control of metal distribution during prespinning is to aid in shrinking during subsequent hammer blows. By controlling neutral shape thickness in specific areas very few shrinkage wrinkles are formed and planishing after forming is held to a minimum.

According to Douglas engineers, success of the process depends entirely upon the closest co-operation between the metal spinners and the drop hammer production experts. This practically necessitates development of the spinning department within the plant so that such co-operation is possible.

Furthermore, on short run parts, cost of subcontracted prespinning work would be prohibitive. It would cost the subcontractor just as much to develop form blocks and techniques for a dozen parts as it would for 10,000. Any savings realized from fewer drop hammer staging dies would be absorbed in subcontractor charges.

An in-plant prespinning department can be organized, tooled and placed in operation very cheaply, with the only specialized tooling being limited to one or two large-size spinning lathes.

SEEN AND HEARD IN THE

By GUY HUBBARD
Machine Tool Editor

"SELLING" SAFETY: During the annual meeting of the Society of Automotive Engineers, I sat in on an interesting session with Sidney J. Williams, assistant to the president, National Safety Council.

Mr. Williams, who delivered the David Beecroft Memorial Lecture entitled "Traffic Safety and the World We Live In", got under way with the interesting statement that accidents in this machine age reflect the supreme problem of our times, which is how to reconcile Man, who has changed but little in 50,000 years, with the Machine—which figuratively speaking, was born only yesterday.

In an interview with Mr. Williams, I found him to be as thoroughly conversant with industrial safety as with traffic safety. Therefore, I framed this question: "Why do so many machine operators — on punch presses for example—exercise such diabolical ingenuity in defeating the purpose of ingenious safety devices which have been designed and installed for their protection, and what can be done to overcome this serious cause of accidents?"

Replying to this question, Mr. Williams was inclined to blame poor design of safety devices and poor public relations work of safety engineers, rather than "dumbness" of operators, for this situation.

In too many cases, he said, safety devices are protective at the expense of production. This hits piece workers and those striving for bonuses, "right in the pocketbook". By the same token, it keeps foremen from making the kind of showings which they think they should make. Under such conditions, operators use ingenuity to avoid the use of the "slow down" devices and foremen shut their eyes to these infractions of safety rules.

To get around this, Mr. Williams recommends that every industrial safety device be engineered so that it in no way will interfere with production. Also that safety engineers make a special point of driving this fact home to operators and foremen when instructing them in the use of such devices. A periodic checkup should be made of all safety devices, both for the detection and replacement of those poorly engineered, and to "resell" to workmen the merits of those which are properly engineered.

Safety apparently is something like religion, a "revival meeting" being desirable now and then not only to make new converts but also to renew the zeal of the righteous before they begin to backslide. As Mr. Williams emphasized in his lecture, we still must reconcile human nature to the machine even when machines supposedly are "tailored to fit operators".

WHITTLING OUT FIXTURES: One of the biggest problems in designing workholding fixtures for production machining is to devise something into which workpieces cannot be introduced wrong-side-to or upside down.

That may sound simple, but the ingenuity of inexperienced operators in making wrong insertions all too often matches that of tool engineers who design the fixtures—and results are disastrous.

It formerly was customary to draw outlines of the workpiece in red ink on a piece of drawing paper—then to "build" the fixture around front elevation, end and top views in pencil until a practical and supposedly "foolproof" result was attained. Then it was inked in as an assembly drawing.

The only drawback was that what looked foolproof on paper sometimes proved vulnerable in practice, resulting in ruined work, broken tools, wrecked fixtures and machines and personal injuries.

Simple remedies often prove to be the cure for serious ailments. By the same token elementary engineering methods sometimes prove to be the answer to difficult technical problems. That was my conclusion recently when I found one of my capable machine tool friends out in his pattern shop. He was building a wooden model of a fixture around a wooden model of a peculiarly shaped automotive part for the production of which he had undertaken to design a special machine.

What he was doing certainly made sense, especially in view of the fact that he already had discovered weaknesses in a supposedly foolproof design which had been worked out on paper. It is all very well to brag about ability to "visualize" designs, but when it comes to visualizing something to hold something shaped like a section of a particularly crooked and irregular tree root, I question the ability of any tool engineer to do a 100 per cent job of visualization.

Samuel Colt whittled out a wooden model of his original "six shooter" and actually had it quite well perfected before he undertook to make a working model in metal. Many people would be surprised to know how much "whittling" is going on today, even in the working out of design and production problems involved in jet propulsion as well as in "shooting irons" and other national defense "hardware" of 1951 vintage.

ADULT EDUCATION: From talks made by high administration and military officials at the industrial and engineering conventions recently, it is apparent that the armed services expect to make a rather clean sweep of industrial and engineering talent between the ages of 18 and 26.

To fill the impending manpower void, training programs designed to cope with slower mentalities and set ways of older people, would seem to be a "must". Not only are they required to meet immediate demands of industry, but they will be needed later on to bridge the educational gap for service men when they resume their peacetime occupations.

By J. F. GULLEY
Welding Engineer
Lincoln Electric Co.
Cleveland

Steel Trunnion Wheels Soft-Surfaced at 60% Saving

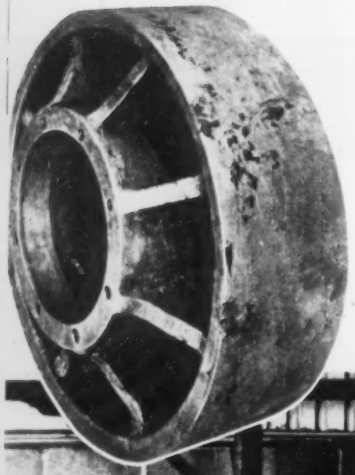
Actual welding time for one wheel is reduced from 10 days to 9 hours, using mechanized high-density process

BY ADAPTING a manual hidden arc welding unit for mechanized operation a Baltimore steel fabricator has engineered an unusually efficient application of soft-surfacing for controlling the wear on cast steel kiln trunnion wheels. Building up the trunnions and machining them saves 60 per cent in comparison to purchasing a new wheel. The mechanized welding setup reduces welding time from 10 days to 9 hours. Previously, regular hand welding methods were used.

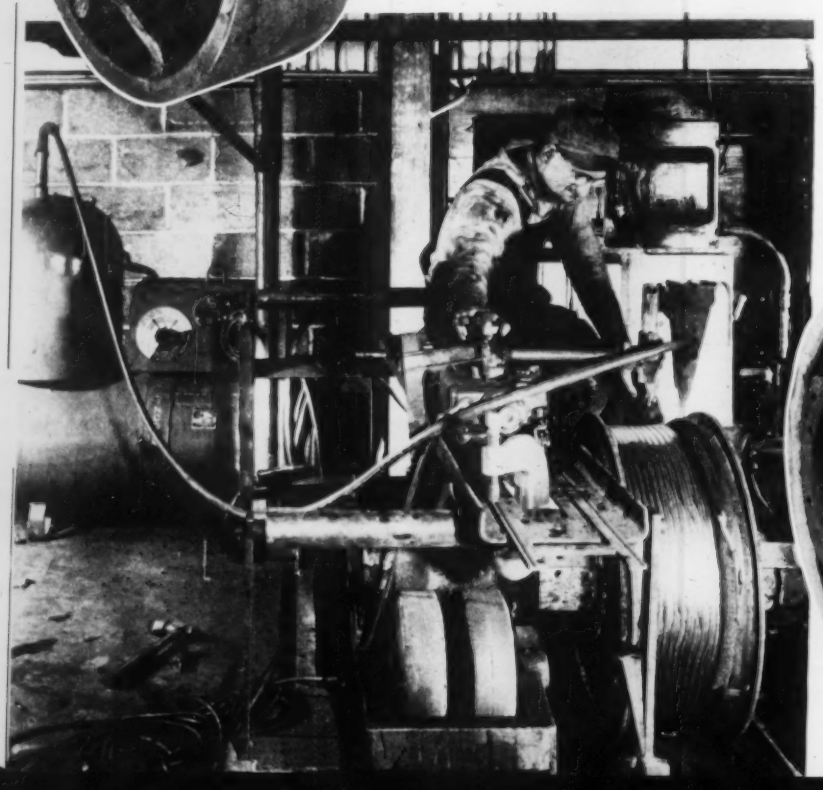
For a number of years McNamara & Co. built up their worn trunnion wheels by conventional hand welding methods. Because the cast steel wheels weigh 1000 pounds and are 9 inches wide and 28 inches in diameter, this was a slow and expensive maintenance problem. It was more economical, however, than replacing with a new unit at a cost of approximately $1000.

Deposition Faster—First consideration was to deposit wear-resistant weld metal that was not too hard. The trunnion wheels make metal-to-metal contact with rider rings which, if worn, would be more difficult and expensive to replace than trunnion wheels. The second consideration was to increase the rate of deposition of the large amount of relatively soft weld metal needed.

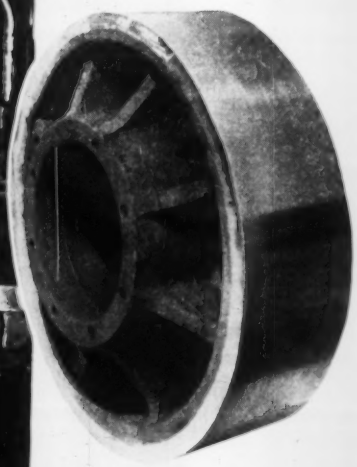
The answers to these two considerations are supplied by a new high-density welding process. This process uses a small diameter, $\frac{5}{64}$-inch electrode wire which produces a dense, homogeneous mild steel deposit. The arc is hidden at times under granular flux, permitting the use of high welding currents, up to 600 amp. On the small diameter wire.



Worn cast steel trunnion wheel, 28 inches in diameter, 9 inches wide. Requires a good wear-resistant but machineable deposit which is not so hard that it destroys the rider rings it contacts



Welding setup for rebuilding wheel by new high-density hidden arc process. High deposition rate saves 40 per cent compared with previous hand welding methods. Welding gun is held stationary while wheel is revolved at surface speed of 22 inches per minute



Wheel machined and ready for use. A replacement wheel would cost 60 per cent more than the rebuilt unit

the resulting high current density produces a deposition rate comparable to using 10,000 amp on a regular 5/16-inch diameter hand electrode. The wire in the high-density process is fed automatically by a mechanism which can be attached to any standard Lincoln 600 or 900 amp, dc welding generator.

Bars Welded to Wheel—The 1000-pound wheel is placed on turning rolls. Mild steel bars, $^3/_8$-inch thick, are formed and placed circumferentially on each end of the wheel. The bars are welded to the wheel with a single pass of a 3/16-inch E6010 electrode. This weld is made with the same welding machine as is used to deposit the build-up with the hidden arc process.

To deposit the build-up the welding unit is quickly adapted for hidden arc welding. A welding gun, to which wire and current are fed through a cable, is held stationary over the wheel. The gun is offset 15 degrees from the perpendicular to the work.

The first pass is directed into the edge of the steel bar and is made as the wheel is revolved to produce an average surface speed of 22 inches per minute. A deposit, 5/16-inch deep and from $^5/_8$ to $^3/_4$-inch wide, is made in each pass with a current setting of 500 amp.

Each pass overlaps the preceding pass and the direction of welding across the width of the wheel is reversed with each layer. The layers, because of the automatic application, are homogeneous, free of surface defects, uniform in depth and easily machinable as deposited. Five layers are required to build up the worn surface of the trunnion wheel to a minimum of $1^1/_4$-inches as specified.

10 Days to 9 Hours—Approximately 300 pounds of flux and 250 pounds of electrode are used on each trunnion wheel. Unfused flux is reclaimed, screened and used over again.

Actual welding time for one wheel is 9 hours. Previous hand welding methods required a minimum of 10 days. The overall saving on the job, including this welding time, is 40 per cent, which increases the cost saving in reclaiming these wheels to 60 per cent. Life of the trunnion wheel after welding and machining is expected to exceed 2 years of constant use. After 6 months of service, the wheel shows no appreciable wear.

Liquid Blasting Trims Die Polishing Time 10%

RECENT application of liquid blasting to remove heat-treating scale and discoloration from forging dies is cutting die polishing time by 10 per cent at Rockford Drop Forge Co., Rockford, Ill. In addition, Rockford engineers say the smoother finish on the dies resulting from the application of the "hydrofinish" process gives better forgings, permits closer tolerances and reduces tendency of the die to stick during forging.

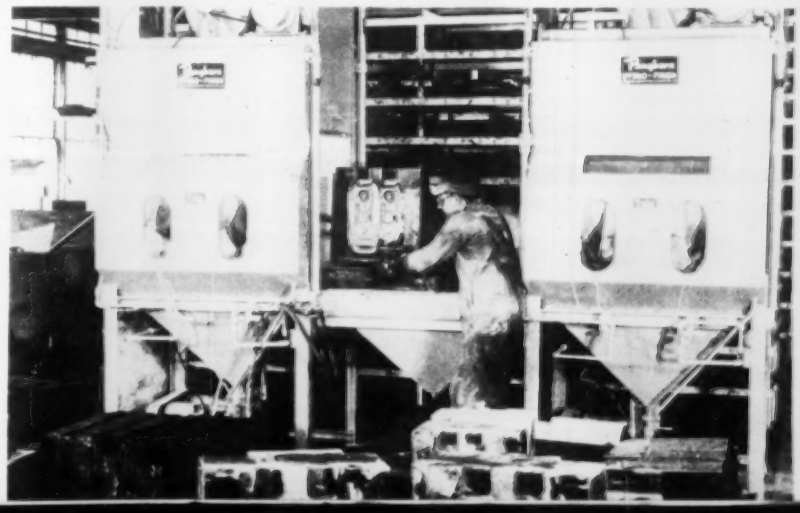
No Hand Polishing—The reduction in the cleaning and finishing time results from the elimination of hand polishing for deburring and the removal of heat-treat scale and discoloration. The method commonly used, requires hand polishing to remove the scale and clean up the die cavity *after* heat treating, a difficult operation because of the hardness of the metal. The new method permits all fine detail work and hand polishing to be done *before* heat treating, while the metal is still soft.

Hydrofinish is the name applied to the technique developed by Pangborn Corp., Hagerstown, Md., for liquid blast cleaning and finishing dies. In this process, the surface is blasted with a high velocity stream of nonmetallic abrasive particles suspended in an aqueous solution. As the suspension is delivered to the nozzle by a circulating pump, velocity is imparted by compressed air.

Particle Size Varied—Particle size of the abrasive may be varied from 60 mesh to 5000 mesh equivalent. When the finer meshes are used, there is no breakdown of sharp edges or corners on the pieces being polished. With extremely fine mesh abrasives it is possible to process precision-machined parts and to hold within tolerances of 0.0001-inch where required.

Versatility of liquid impact blasting has led to its use also for the removal of grinding lines and for improving the useful life of dies for glass, rubber, plastics and other materials.

Steps	Old Method	New Method
1	Roughed out	Roughed out
2	Hand Worked & Hand Polished	Hand Worked & Hand Polished
3	Heat Treated	Heat Treated
4	Hand Polished	Liquid Blasted



Twin-cabinet Hydrofinish installation with track and loading car between cabinets. In cabinet at right a coarser abrasive is used to accomplish bulk of the heat treat scale removal job. Finer abrasive in left-hand cabinet imparts a high finish to the dies

HOW TO APPLY CUTTING FLUIDS TO MACHINING OPERATIONS

Longer tool life, better surface finish, lower power consumption and greater accuracy are some of the benefits resulting from bathing cutting zones with large volumes of clean fluid. Several improved types of fluid application systems are available for the job

By R. B. NIEBUSCH and E. H. STRIEDER
Cincinnati Milling Machine Co.
Cincinnati

EFFECTIVE cutting fluids are able to provide many money-saving benefits in machining and grinding operations if they are applied properly. Only when a large volume of clean fluid bathes the tool (or wheel) and the actual cutting zone are these advantages obtained.

This important requirement can be met by making relatively simple, inexpensive modifications to the existing general-purpose cutting fluid supply systems on many machine tools in use today. Increases in tool life of as much as 100 per cent may be obtained, together with improved surface finish, greater accuracy, the reduction or elimination of steam and smoke and the evaporation of many operator complaints.

Why Cutting Fluids?—Main performance functions of cutting fluids, as used in machining, are the removal of heat from tool, chip and workpiece and the reduction of rubbing friction between chip and tool. An adequate supply of cutting fluid helps to flush the chips away from the cutting zone. A large volume of clean fluid must bathe the actual cutting zone at all times.

The cutting fluid supply system on a machine tool should be so arranged that the operator does not have to adjust or tamper with the supply lines in order to direct the flow to the cutting tools while operating the machine. Supply lines should be adjusted to provide an abundant supply of fluid to the cutting tools at the time that the machine is being set up, and then fastened in position, to remain there for the duration of the job.

Flow Without Splash—In general, best results are obtained by supplying the cutting fluid to the cutting tools in a copious flow, with little or no pressure. An abundant supply of fluid at very low pressure assures that the machining operation will be bathed in the fluid without the possibility of the stream being deflected from the actual cutting zone and without the objectionable splashing which often accompanies the use of high pressure. An exception to this rule: Such applications as drilling, reaming and tapping, where fluid can be supplied under pressure through the shank of the tool without danger of splashing or deflection.

Many machine tools in use today can be made more efficient by simple rearrangement of their cutting fluid supply systems, by providing larger piping with a relief valve in the system and by removing restrictions to get maximum nozzle flow at low pressure. Where more than one outlet is used, as with multiple tools a flow valve should be placed in each line to control the quantity of fluid necessary to suit the requirements of each cutting tool.

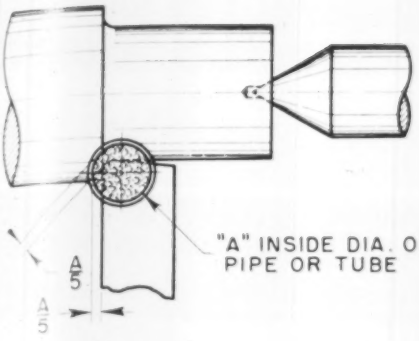
As to the amount of fluid, a simple "rule-of-thumb" gives adequate results: Gallons of cutting fluid per minute equal maximum horsepower required for the cut. This rule should be adhered to wherever possible on production operations, provided the piping does not become too cumbersome for the machine setup.

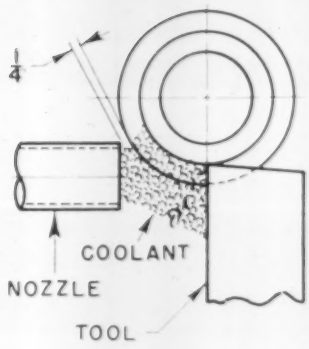
General effectiveness of a cutting fluid can also be increased by the proper arrangement of the discharge from the relief valve into the supply tank, when such a valve is used.

Lathe-Type Operations — The fundamental principle to be applied to horizontal type turning and boring machines is to direct the flow of cutting fluid, by piping, onto the cutting tool in such a manner as to submerge the portion of the tool producing the chip. If a tool has to be inverted or is in a position that is not horizontal, flow to that tool should be metered by a valve in the supply line, so that the cutting fluid is under enough pressure to force it to submerge the cutting edge and the chip.

For drilling and reaming on horizontal machines, much better tool performance will be gained by using so-called "oil feed" drills and hollow-shank reamers. Drills and reamers of this type transmit the cutting fluid to the cutting edges and flush loose chips out of the hole. If a machine has no cutting fluid supply to the turret tool positions, a coolant distributor should be provided.

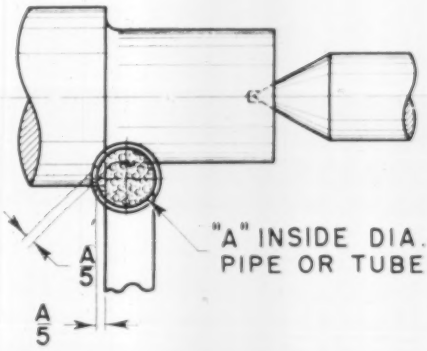
When chasing and tapping operations are performed on horizontal machines, consideration should be given to directing the cutting fluid flow to the very cutting edges of the tools. Using a die head with chasers, a full flow of cutting fluid directed into the die head (onto each chaser) produces threads of more uniform accuracy and better finish. In addition, the

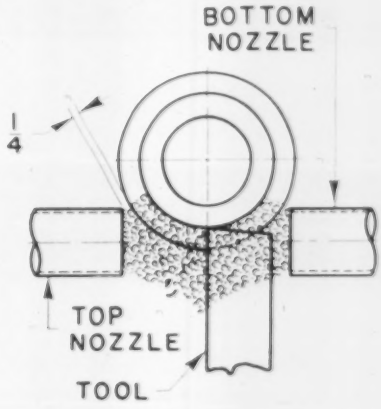


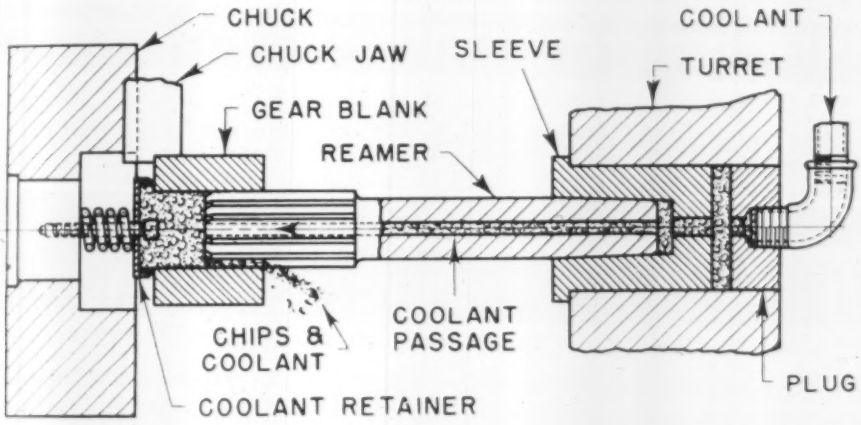


Left—In turning or facing, the cutting fluid supply nozzle should have an inside diameter at least three-quarter the width of the tool. It should be located directly over and close to the zone where actual chip formation takes place

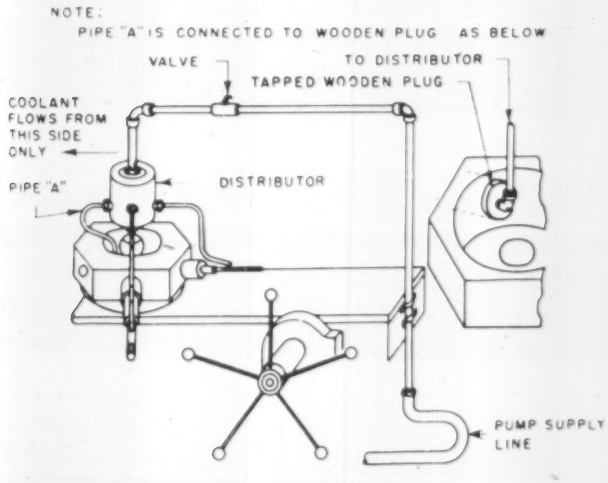
Right—Heavy-duty turning or facing requires a nozzle to supply cutting fluid from below the tool, in addition to the supply from above



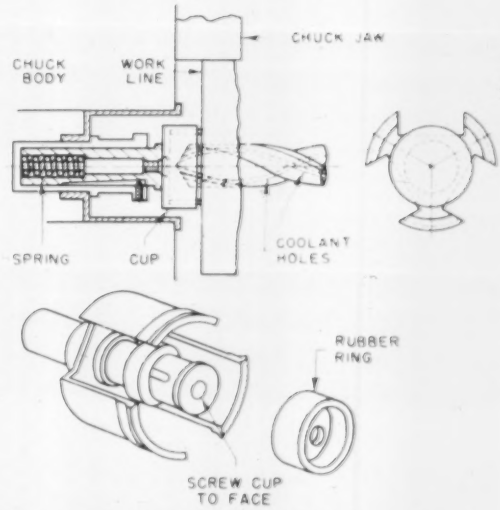




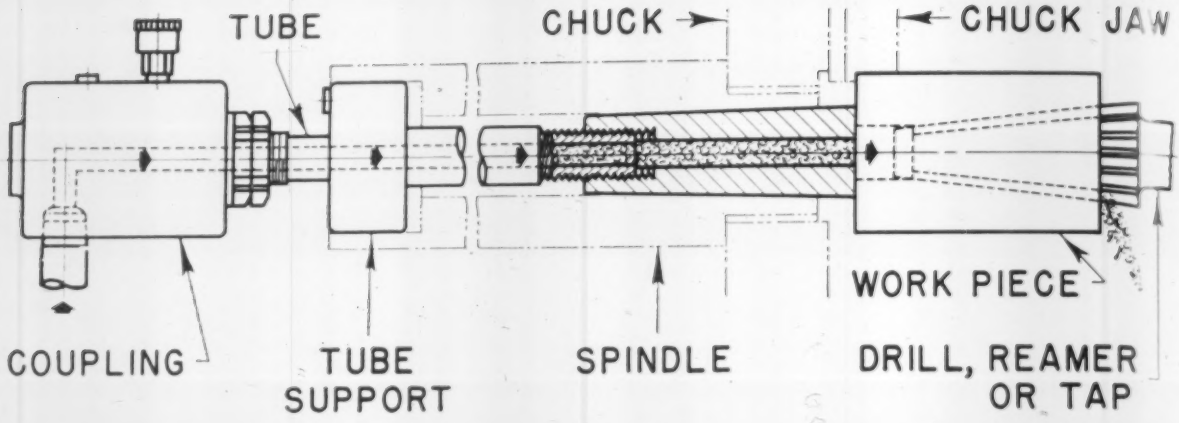
Left—For drilling, reaming or tapping through holes with hollow-shank tools, a cutting fluid retainer assures that all cutting edges will be flooded and that chips will be flushed from the hole



Above—Machines not equipped with a supply system to the turret need a cutting fluid distributor



Above—Details of a simple cutting fluid retainer for use when drilling, reaming or tapping through holes



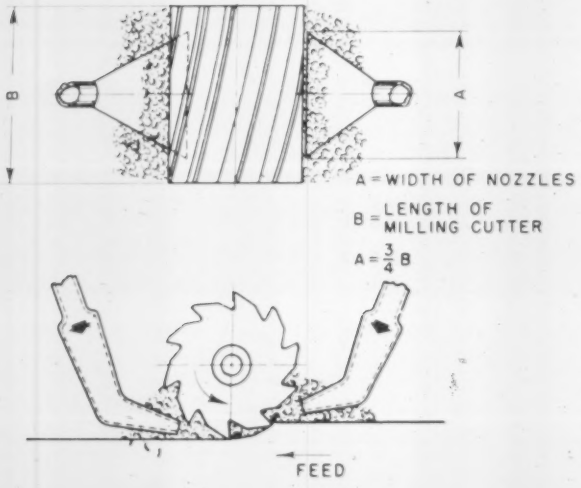
When machining castings or forgings that have a cored hole, the cutting fluid can be applied through the spindle from the rear

life per grind on the chasers is increased about 40 per cent, in terms of pieces produced, and the chips are washed out of the die head.

Holes Need Fluid Retainers—Whenever a workpiece requires a through hole, as in the case of some chucking work, it is advantageous to use a cutting fluid retaining arrangement. Such retainers can be applied to applications such as drilling, boring, reaming or tapping.

When machining castings or forgings having a cored hole, the cutting fluid can be applied through the spindle from the rear and into the retainer. This method is extremely helpful when core drilling and reaming deep holes. Here, pressure can be used that will adequately wash the chips out through the flutes of the tools.

Milling Operations Different—In cutting fluid applications on milling operations, particular attention should be given to slab and face milling. In slab milling, the flow of cutting fluid should be directed to both the "incoming" and "outgoing" sides of the cutter, by means of flat, fan-shaped nozzles on each side of the cutter, using valves to meter the flow to each of these nozzles. Width of the nozzles should be about three-quarters the length of the cutter.



In slab milling, the cutting fluid should be supplied to both sides of the cutter by wide, flat nozzles

In the case of face milling, both vertical and horizontal, it is advantageous to supply cutting fluid to the cutter by means of a ring-type distributor. This type distributor can direct as many streams of fluid onto the cutter as desired, thereby keeping each tooth in the cutter completely immersed in the fluid at all times.

The application of cutting fluid to hole broaching can be done effectively by using a distributor. Such distributors can be made to suit various types and sizes of spline broaches as required. Use of the distributor assures that the pockets between successive broach teeth will carry an adequate quantity of cutting fluid into the hole. Cutting fluid applications on vertical machine tool operations such as drilling, reaming and tapping can also be improved by use of a distributor.

Grinding Means Cooling—Correct application of cutting fluid to grinding operations is of utmost importance. In such operations it is essential that the workpiece be kept cool, the grinding wheel be kept clean and lubrication be provided for the chips as they form. A cutting fluid, when properly applied, will perform all three of these functions.

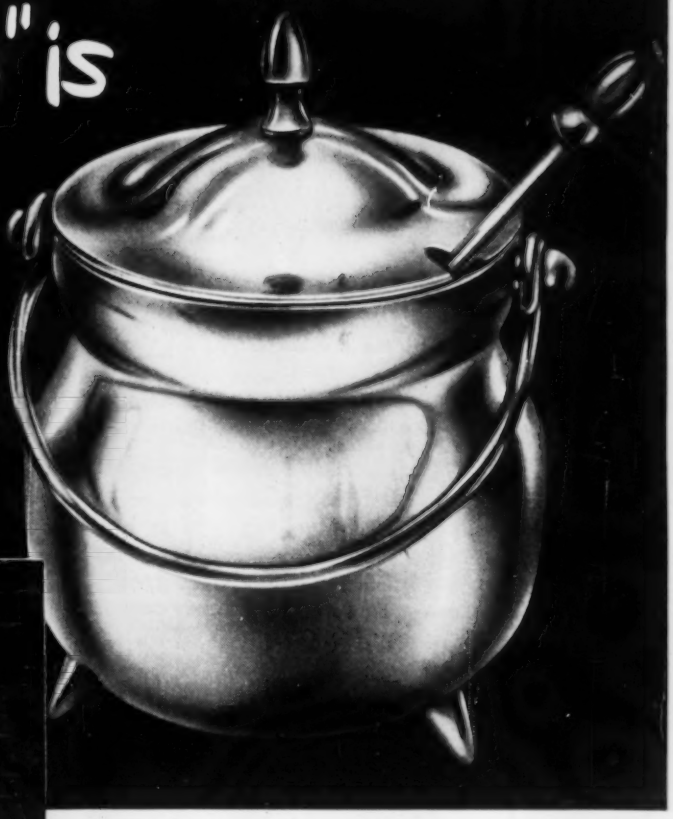
Cutting fluid must be applied in large quantities under very little pressure. The machine piping should be large enough to carry the required volume of cutting fluid and the nozzle so designed as to offer the least possible restriction to the flow of the cutting fluid.

Application of cutting fluid on most centertype and centerless grinding operations is usually done in a satisfactory manner. However, there are occasions when the operator will partially close the valve in the supply line, to keep from being splashed. This condition usually can be corrected by adjusting the nozzle to a more satisfactory angle with respect to the wheel face. In some extreme cases, a special splash guard is the solution.

Tubing Plugged—The most difficult parts to cool properly and grind rapidly without burning are hollow rolls and tubing. The thinner the wall, the hard-

From data presented by the authors at the annual meeting, ASME, New York, Nov. 26-Dec. 1, 1950.

"Good Enough" is NOT ENOUGH!



Revere Brass of carefully controlled grain sizes is used in the Andirons, the Fire Lighter, the Lighter Cover and the Torch Handle.

• Sometimes a routine laboratory procedure finds ways to make improvements even when everything already is "completely satisfactory". In fact, that is one of the main reasons for carrying out laboratory routines.

A case in point is the Decorative Polished Brass Fire Lighter produced by Peerless Manufacturing Corp., Louisville, Kentucky.

Here is a product that was rolling down the production line and on into homes all over the country. The consumers were satisfied and Peerless was pleased with the appearance of its product. There were no troubles. Nevertheless, the Revere Technical Advisory Service was asked to study the polishing methods and find out if even better procedures would be advantageous.

Just as a routine procedure our laboratory men cut up several of the partly drawn "Pots" and checked on the gauge diminution caused by drawing. The "Lab. Men" are continually doing things like that . . . studying the successful products in order to pile up data which may be useful when they run into a "problem" product.

They found that with a different drawing sequence the draws, although still deep, could be made less severe. The new drawing sequence would permit the use of smaller grained metal. The smaller grain would make polishing easier, even though the product as it went out into the market could have *no* more than the same highly polished beauty it always had.

By testing to find if it could get one cost saving, this company got two.

Perhaps you also are thinking in terms of one slight improvement when two or more are readily available. The Revere Technical Advisory Service offers the laboratory routines which will find out. If you use copper, brass, bronze, aluminum, nickel silver—any alloy which Revere can make—just get in touch with the nearest Revere sales office.

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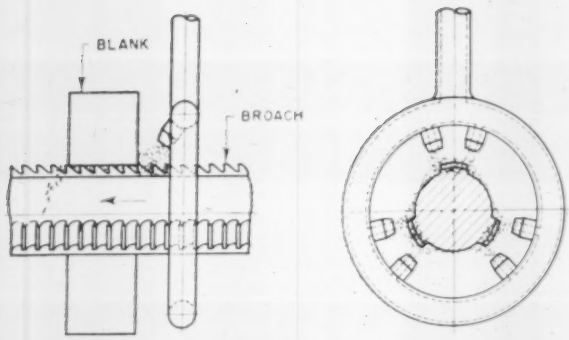


The use of a cutting fluid distributor in hole broaching fills the pockets between the broach teeth with fluid. Vertical drilling, reaming and tapping operations can also be improved by use of distributors

er it is to dissipate the heat produced by the grinding wheel. However, many workpieces of this type can be filled with the cutting fluid and the ends plugged to retain that fluid. This procedure greatly reduces grinding time; a much more accurate part is produced with a better surface finish.

Internal grinding presents a more difficult problem in cutting fluid application. Here the cutting fluid must flush the chips removed from the work, and the grain and bond worn from the grinding wheel, out of the hole being ground. It is considered good internal grinding practice to use as large a grinding wheel as possible and this condition makes it very difficult to get a large enough amount of cutting fluid into the hole to cool the work and keep the grinding wheel clean. A compromise must be made between the size of grinding wheel used and the amount of cutting fluid that is flushing through the hole.

As large a diameter as possible should be used for the supply tubing. The outlet should be positioned to so direct the cutting fluid that it will be dragged between wheel and work by the rotation of the wheel. Workpieces with a hole through them will permit cutting fluid to be applied through the work head spindle from the rear.

Twin-Nozzle Setup — Most surface grinding operations on reciprocating table type machines can be greatly improved by using two nozzles rather than one. On this type of machine, when one nozzle is used an adequate amount of cutting fluid is applied when the table and work move in one direction; when the table and work move in the other direction, no fluid is available until after some grinding has taken place.

The amount of cutting fluid starvation that takes place depends on the diameter of the grinding wheel. This condition causes the workpiece to heat and causes a premature failure on the cutting face of the grinding wheel.

Cutting fluid tank on a grinding machine should be kept full at all times. A high level in the tank will permit a better settling-out action to take place and in addition the cutting fluid in the tank will be cooler.

Metal Spinning Looks Ahead

INDUSTRIAL product trends of tomorrow are foreseen in the design rooms of the metal spinning industry of today. So said Lyndon Burnham of Roland Teiner Co., Everett, Mass., speaking at a recent ASM meeting in Worcester. Demonstrations of metal spinning were a feature of the meeting, first in an educational series of five to be conducted by the society.

In the television industry, for instance, a process developed in making cream separators has been adapted to spinning metal cones for TV tubes. This development has meant stepped-up, large-scale production, and lowered costs. Burnham defined metal spinning as "a technique that shapes metal sheets to a preformed design by revolving pieces of metal against a revolving form."

Potter's Wheel to Production Line — Tracing the origin of metal spinning to the ancient potter's wheel, he demonstrated that modern spinning techniques have now been stepped up to a production line basis. Output in metal spinning can be made comparable to machining and stamping. Governing factors include: Production run, choice of metal, product diameter and thickness, and machine revolutions per minute.

A great size range, from parts as small as a thimble to some as large as old-fashioned mill wheels is possible. Starting with a metal disk turned at selected speeds on lathe or flanging machine, metalworking and shaping is effected by tool pressure sometimes aided by heat. The Teiner Co. has developed a speed-thickness chart enabling the metal spinner to set a correct operating run, depending on the requirements of each particular job.

Production economy, Burnham said, is a prime consideration in determining what articles to spin. Unless quantities run into the thousands of pieces, he declared, it is frequently cheaper to spin than to stamp. With stainless steel and high chromium metals, even small quantities are economical. Then too, spinning can be combined with welding to produce an extensive line of parts.

Adaptability Important—Adaptability of the spinning process is being utilized by industrialists with war contract potential in a year when future requirements are linked with uncertainty. They are using metal spinning to produce models and small production runs economically.

Virtually any metal or alloy can be spun—aluminum and its alloys, steel, stainless steel, copper, bronze, brass, nickel, magnesium, Everdur, Monel and Inconel. In addition to sheet metals, great strides have been made in spinning tubing. Expansion and reduction can be accomplished by cold spinning, but the application of heat widens the range. Contrary to popular belief, it is not necessary that large quanties be involved to utilize hot spinning.

Advances, the speaker pointed out, have also been made in increasing the diameters spun. By using high speeds for small blanks and then testing progressively slower speeds for larger sizes, actual speeds and new techniques have been developed for many parts.

Magnesium Bomber Wheels Cast to Close Tolerances

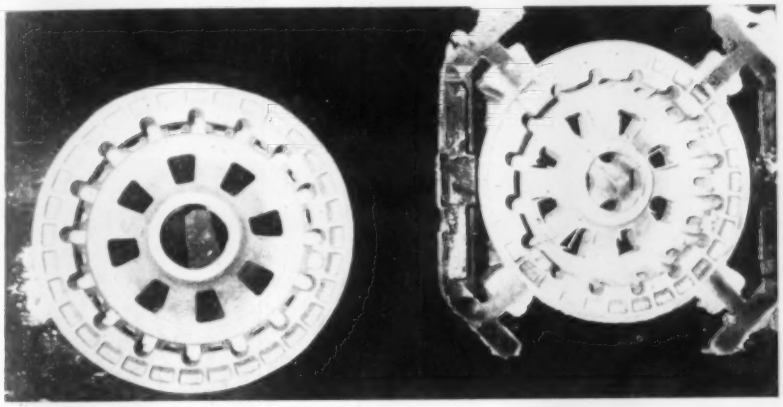
CLOSE control in every production step is the secret of Wellman Bronze & Aluminum Co.'s success in casting magnesium wheels for the Air Force's B-36 bombers.

Casting tolerance on the 56-inch diameter, 16-inch wide split-type wheel is plus or minus 1/32-inch. The metal is melted in three gas-fired furnaces and poured off to two 500-pound pots for superheating. Metal is poured at 1500° F after being processed to obtain fine grain.

Chemical analysis of the Well-Cast alloy: Aluminum 6 per cent, zinc 3, manganese 0.20, magnesium balance.

Separately cast test bars poured from the same melt give the following typical physical properties:

Newly-developed four-wheel main landing gears being installed on production model superbombers at Consolidated Vultee's Fort Worth, Tex., plant. The eight 56-inch wheels distribute the bomber's 278,000 pounds over a greater area than did the two 110-inch wheels on the experimental model



Finished wheel casting, left; rough casting, right. Rough casting weighs 257 pounds

Tensile strength 40,000 psi, yield 13,000 psi, elongation 14 per cent. Solution heat treatment of the wheels increases the tensile and elongation. Castings are x-ray inspected.

Flasks are 44 inches square. Copes are made on stripper machines, drags on jolt rollover machines. Required pressure on torque tie bolts is 2300 inch pounds.

Physical properties of the sand: Tensile strength 8 psi, shear strength 3 psi, moisture content 3 per cent, permeability rating 180.

Ratio of rough casting to machined casting, in weight, is 2½ to 1. In rough casting form the wheels weigh 257 pounds. Wheels are given a chrome pickle treatment for surface protection prior to machining.

A 1000-mile road test subjects the wheels to a static load of 60,000 pounds, a radial load of 330,000 pounds, side load of 115,000 pounds; burst test 960 psi. Actual gross weight of the bomber—357,000 pounds.

Wellman Bronze is celebrating its 40th year in business. The company is one of the original licensees to cast Dow magnesium metal.

Metal Sandwich Conducts Heat Well

Higher lateral conductivity than pure copper under some conditions has been found on laboratory tests conducted on clad metal consisting of copper sandwiched between stainless steel surfaces. Various grades of the clad material, known as Rosslyn metal, with varying amounts of copper were used in the test, as were stainless steel, three-ply stainless clad with mild steel center and pure copper.

Samples of each metal were placed inside a furnace hearth and extended out through the furnace door. Tests were conducted at various heats from 850 to 1500° F inside the furnace with the time needed to heat each sample outside the furnace to 125 or 200° F surface temperature being recorded in each case.

It was found that in the case of Rosslyn metal, the stainless steel surfaces acted as insulation, sealing in the heat as it traveled through the copper. The measuring point was not inside the furnace, but about 4 inches from the furnace hearth so that radiation and emissivity effects of the material outside the furnace were also important.

Horizontal Boring Mill "Versatilized" for Multiple Operations

Die sinking, profile milling, contour machining, angular machining, shaping, broaching and press assembly are among many capabilities added through incorporation of tracer control, underarm and related attachments

By KEITH F. GALLIMORE
Vice President, Engineering
Giddings & Lewis Machine Tool Co.
Fond du Lac, Wis.

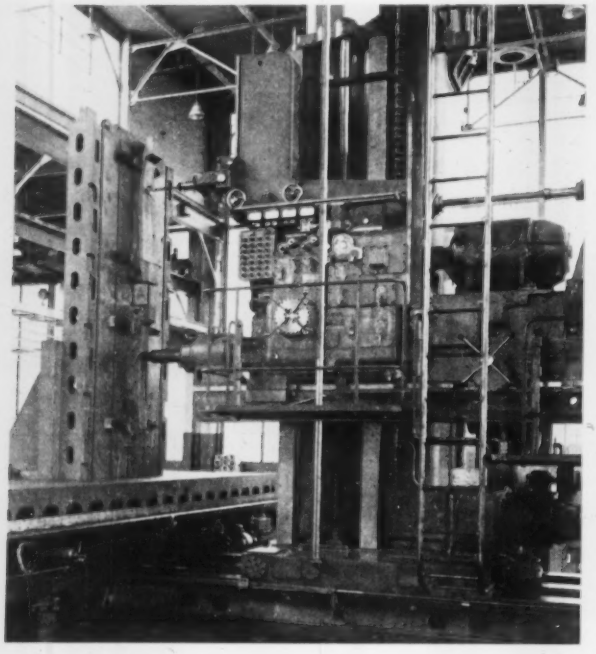
ADAPTATION of two unique engineering features to the familiar Giddings & Lewis planer-type horizontal boring, drilling and milling machine has expanded working range and capacity of this versatile machine tool. With these features, this general purpose machine meets still more highly diversified requirements. For example, tracer control, together with a power-operated underarm ram and spindle support, opens up a brand new and broad range of operations in a large automotive plant—operations which ordinarily would require several special production machines.

Handling Easy—This machine therefore simplifies handling as well as machining. It is well adapted for rapid "sinking" of body and fender dies and forging dies; for milling, drilling and boring workholding jigs and fixtures; for manufacturing special press equipment or press components; for general maintenance of large production machines; and numerous other jobs that constantly arise in an automobile plant.

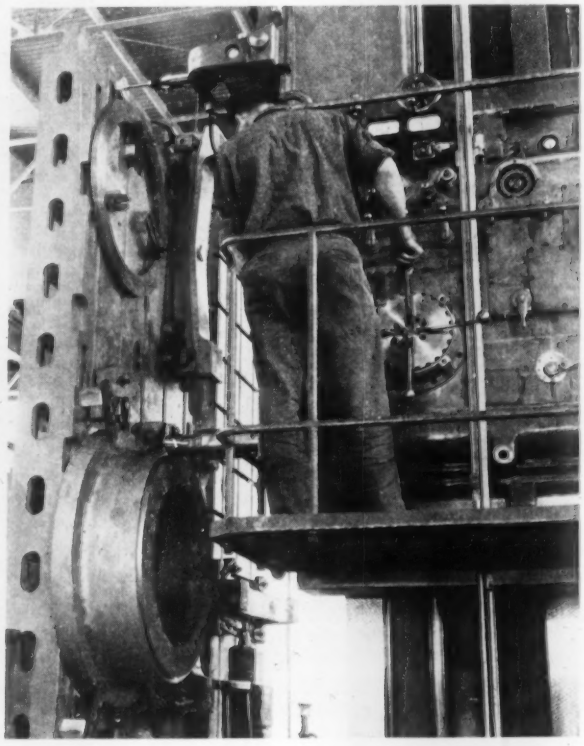
Design is based upon several major tool engineering factors vitally important in modern machine shop practice.

These include:

1. Size, shape and weight of parts to be machined.

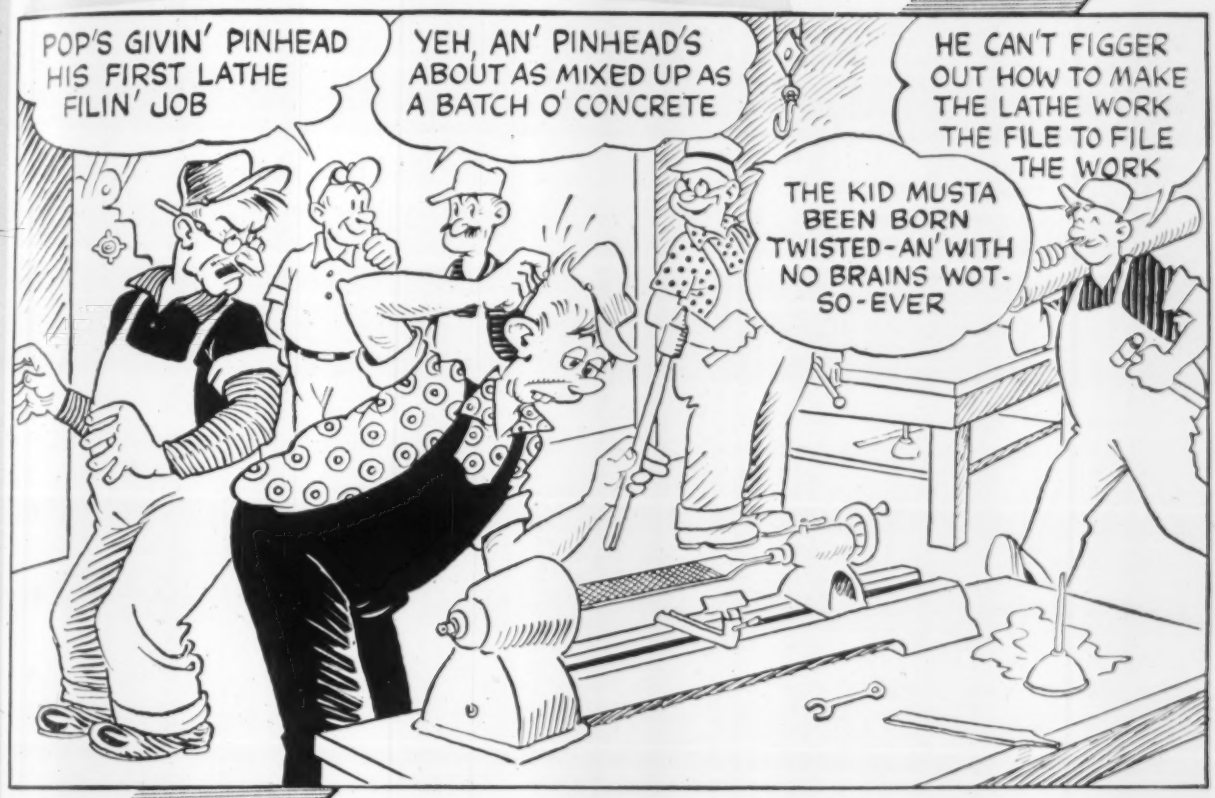


Tracer-controlled duplication of automobile bumper die. Master form is mounted on upper portion of vertical plate, with die block immediately below. Note that ball end of tracer arm matches spherical nose of end mill in spindle



Closeup of contour-control setup for peripheral milling steel casting. Composite of vertical feed of head and horizontal traverse of table—under impulse of tracer roller on master ring—results in circular path of revolving cutter around circumference of casting

POP'S school of Filing


POP'S GIVIN' PINHEAD HIS FIRST LATHE FILIN' JOB
YEH, AN' PINHEAD'S ABOUT AS MIXED UP AS A BATCH O' CONCRETE
HE CAN'T FIGGER OUT HOW TO MAKE THE LATHE WORK THE FILE TO FILE THE WORK
THE KID MUSTA BEEN BORN TWISTED-AN'WITH NO BRAINS WOT-SO-EVER

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THE lathe rotates the work and not the file, of course—as anybody but Pinhead would know. But not every lathe mechanic knows of the existence of a special Nicholson file that works very fast and does a beautiful job of smooth-finishing on spindles, shafts, dowel pins, hubs, gears, rolls—anything, in fact, that can be set up and spun in a lathe.

It's the Nicholson Long Angle Lathe File (also made in Black Diamond brand). Though a regular Mill Bastard will do a good job and is a bit easier to use, this special file, with teeth angle increased from 25° to 45°, has less tendency to fill up. The chips slide down the longer angle and are forced out at the edge by the "forward" motion of both the file and the work. Consequently, there is less chance of chip-scratches on the surface being smoothed. (A stroking action, under light pressure, should be used to distribute the cutting throughout the file.)

Made in Flat type with "Long Angle" stamped on tang; and sold through industrial supply houses. Unsurpassed Nicholson quality, of course.

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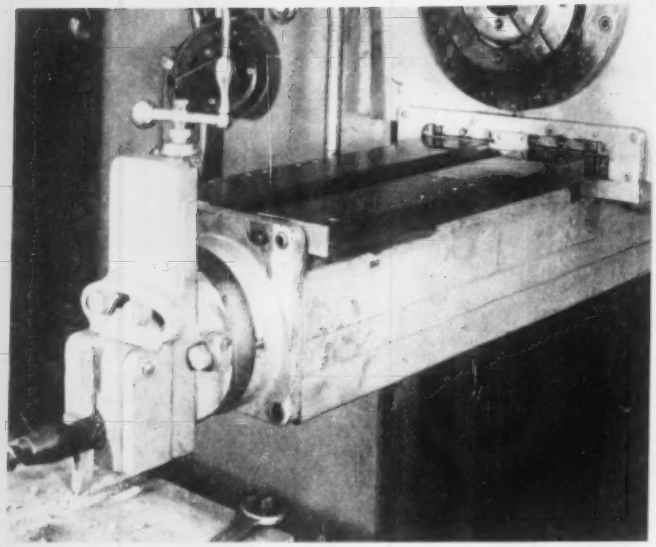
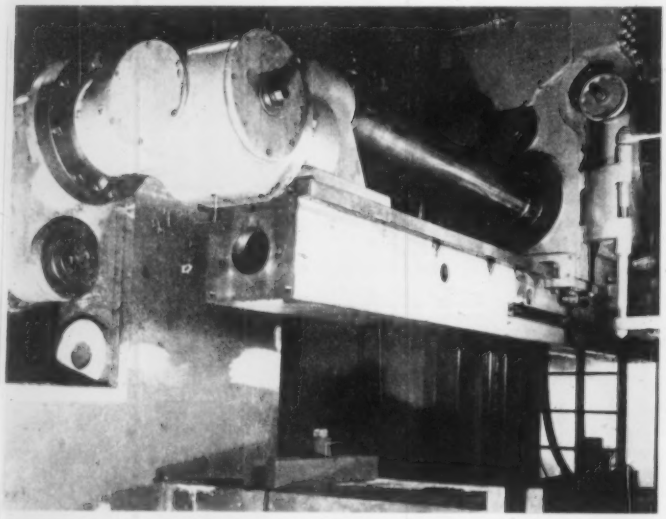


Power-operated underarm functions as a shaper ram when equipped with tool holding "clapper box" and reciprocated independently of spindle. This provides simple method for machining pads, bosses, slots and keyways, even in ordinarily inaccessible places

2. Number of settings to complete all machining operations.
3. Overall machining time required to complete job.
4. Advantages of tracer control and profiling attachments.
5. Simplification of machining with spindle extended and amply supported by underarm.

The designers have taken maximum advantage of standard machine movements and feeds. For example, it is possible to place a workpiece on the



Angular milling attachment mounted on underarm and driven by machine spindle. This attachment—either with or without offset arm shown here—can be swiveled around to get at surfaces in various planes. Note solid support that is given by the extending underarm

60 x 156-inch machine table and cross feed full 120 inches. If part is unusually large or odd shaped involving table overhang, machine column can be traversed 48 inches on its runway at right angles to table. Spindle end support column also moves on its runway to facilitate table overhang on the opposite side—this for back boring, back facing etc. A third movement, that of headstock on column, provides 72 inches of vertical travel above the machine table.

Works From Any Position—Standard feed movements, engaged independently or in combination, make it possible to perform almost any operation on a workpiece in almost any position. Ordinarily, work mounted on the table is rapidly presented to the cutting tool either through table movement or column travel. Regardless of its size or shape, work can be located close enough to the headstock so that it is not necessary unreasonably to extend the spindle to machine hard-to-reach surfaces. However, if it is necessary to extend the spindle to perform "pick-up" operations, this is done by bringing into action the power-operated, underarm ram type support.

Only one or two settings ordinarily are required to complete a job. Because of its ability to bore, mill, face, backface, counterbore, ream, drill and tap (all these being standard operations) merely by changing cutting tools, it is unnecessary to transfer work from one machine to another. This saves a lot of time.

With the added advantages of tracer control, it is practical to profile and contour mill areas on the workpiece without disturbing its setting. Cumulative errors which are apt to result in a succession of operations, as the result of unclamping, moving and reclamping the work, also are avoided through the single setting.

Ram Built-in—Operational range is materially increased by its built-in power operated underarm ram and spindle support. This has a travel of 60 inches and rigidly supports the spindle and auxiliary attachments when machining up to that distance beyond face of headstock. It is provided with 21 power feeds identical to those of the spindle. Spindle and underarm can be operated independently, or both can be engaged for simultaneous feed.

Used independently, the underarm is effective as a shaper ram. Equipped with a "clapper box" attachment, it readily performs pick-up machining operations on large, cumbersome parts without changing their original setting. This shaper function is employed to machine pads and bosses, and to cut keyways and slots. The ram also can be equipped with a plain angular milling attachment. This simplifies machining of internal and external surfaces that might create a problem on other types of equipment. The machine spindle is extended to drive these milling units and is amply supported by the underarm. Simple broaching and press assembly operations are among the other practical functions of the shaper ram.

To prevent deflection when spindle is extended to its extreme length, an antifriction roller bearing spindle support is placed on the ram. This makes it possible to perform accurate boring, milling and drill-

ing operations with spindle when the latter is extended as much as 5 feet beyond headstock face.

Duplicating Attachment—Profiling, contour milling and die sinking are readily performed on the machine with the help of an electrically-operated duplicating attachment—these in addition to the general operations already mentioned.

This auxiliary tracer control equipment operates the various machine units to reproduce automobile body dies and similar details from master forms or templates. Open construction of the machine makes it ideally suited for mounting templates and work on the machine table, there being no components to interfere with their mounting. This characteristic permits broad latitude in type of contour work that can be handled.

Tracer control attachment is provided with a ball swivel arm and tracer tip, the latter contacting and following the master form. Sliding adjustment of tracer arm on a vertical holding column mounted on the machine headstock, provides easy setup adjustments. Also, this makes possible the use of full vertical headstock movement of the machine. Coupled with the table cross feed, this provides an unusually wide work pattern.

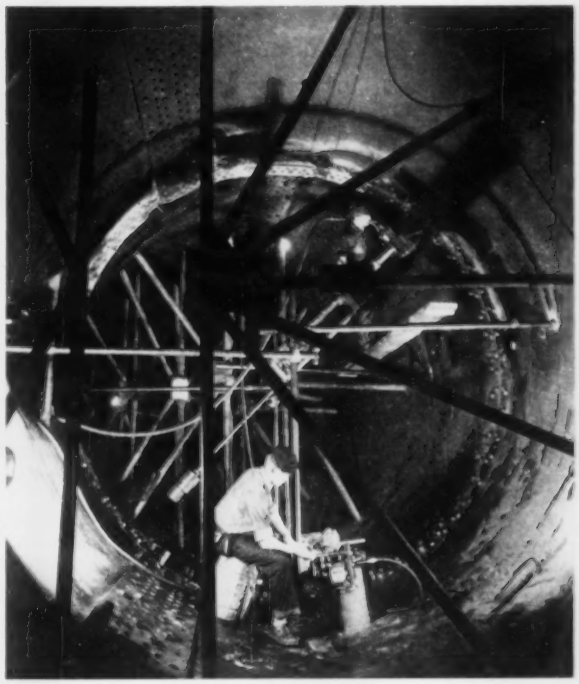
Tracer arm tip contacts the master form either from end or side, thus activating the feed motors. Vertical headstock feed, table feed and column feed all respond instantaneously and exactly to the tracer control impulses. With this control system it is possible to perform an extraordinarily wide range of duplicating work, both as to shape and size.

Uses Standard Elements — Design of this new planer-type underarm machine is marked by arrangement of standard machine elements, ingeniously combined to give unusual work handling capacity. For instance, headstock, column, column runway and end support column and runway are similar to the corresponding components of the standard No. 560 planer type horizontal boring, drilling and milling machine.

The headstock has been cleverly modified to receive both tracer control attachment and underarm support, while controls and motors have been re-engineered to give the "infinite" speed and feed characteristics required by the duplicating attachment.

The table is especially designed for open mounting of large workpieces. There are no interfering machine structures to complicate settings. Elaborate and costly holding fixtures are unnecessary. All regular features of G & L equipment characterize the new machine. As is standard Giddings & Lewis practice, this new machine has two spindles, one with low speed range for heavy duty work, the other with high speed range for sensitive drilling and tapping. Other regular features include speed and feed selectors; synchronized movement of headstock and end support block to insure positive bar alignment; complete safety devices for all traversing units; and numerous other features equally important. Controls are centralized so that the operator can watch all cutting operations at all times without deserting his station.

Finishing Touch on Bull Shoals Casing



DRILLING, reaming and countersinking operations inside a plate steel, all-welded hydraulic spiral casing to permit riveted butt strap connection in the field are performed by shop workers of Allis-Chalmers Mfg. Co., Milwaukee. Casing weighs about 50,000 pounds and is 1 inch thick. It is for one of three 62,000-hp, 190-foot head, 128.6-rpm hydraulic turbines being built by the company for the Bull Shoals development on the White river basin in Arkansas

Additive Adds Hardness to Steel

A formulation of wetting oils and other selected ingredients which, when added to Beacon oils made by J. W. Kelley Co., Cleveland, give the best hardness to oil hardening steels with the least distortion, oxidation and sludging is a development of that company. Called Quenzine, the additive is said to extract more heat in the initial submergence and control the cooling rate from that time on, keeping distortion, strain and cracking to a minimum.

Tests conducted by the company show that Rockwell C readings are from 3 to 10 higher when the additive is used. The company's quenching oils are reported to give the best hardness when the oil bath is operated at 130 to 140° F.

Marks Small Diameter Parts

Custom made for each job, with the radius, size and number of characters determined by the piece to be stamped is a periphery press holder developed by M. E. Cunningham Co., Pittsburgh. The model PPH-10 holder is made with shank size to fit any press, being designed to use regular straight-sided type. A removable plastic side plate holding the type in place is pliable, compensating for slight variations in body type.

By CARL A. BANZE
Jas. H. Matthews & Co.
Pittsburgh

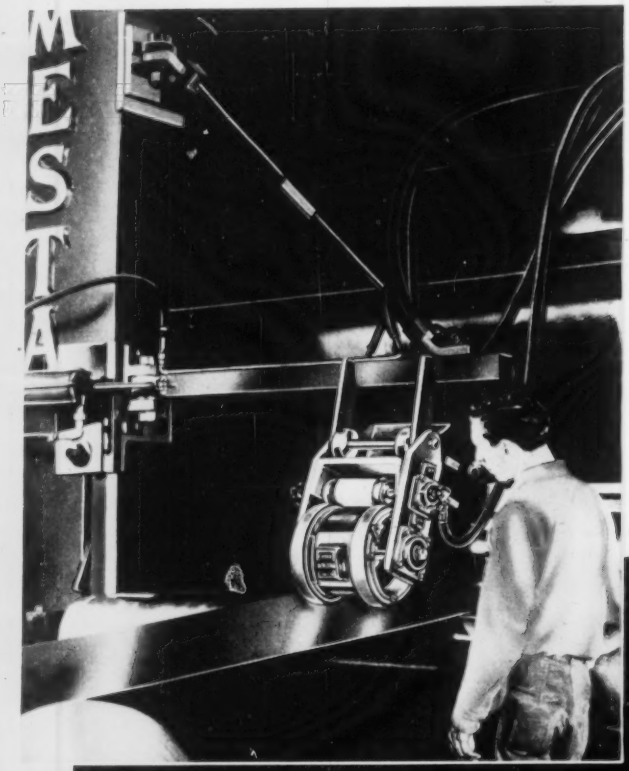
Rotary Printer Speeds Sheet and Strip Stenciling

Imprinting identification data on surface of steel while in transit through rolls now accomplished automatically by revolving cylinder. Rubber type held securely in die while in service on high-speed temper mill

SHEETMAKERS in the early days of the industry equipped their inspectors with a rubber stamp mounted on a handle to identify each sheet as approved. This stamp was known as the "hammer-style inspector's stamp". The inspector hit it against an inked pad before striking the sheet, the impression often being illegible. At the end of a working day, the inspector was a tired man.

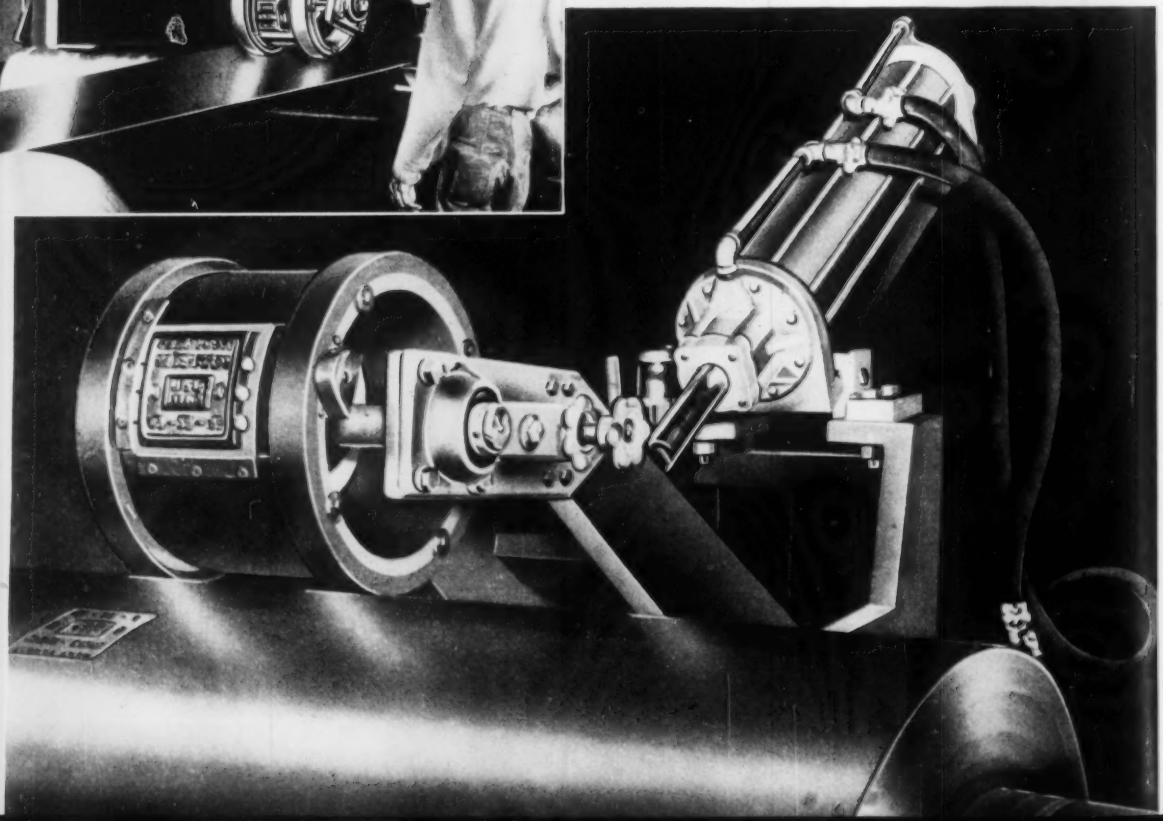
As steel mill production increased, and high-speed equipment was developed, the hammer method of product identification remained, archaic as it was, for lack of a more efficient, speedier marking device. The inspector soon found himself greatly handicapped, the marking taking so much of his time that he had little opportunity to inspect.

To meet the need for an up-to-date, efficient method of printing inspection data on sheet and coil stock, Jas. H. Matthews & Co., in co-operation with strip mill operators, developed the coil and sheet printer. This unit was designed for the automatic imprinting of trademarks, heat numbers and the inspector's



Printer in action on flat surface of strip after temper pass. Marking speeds range from 3000 to 4000 fpm

(Below)—Rotary printer in operation on temper mill printing the coil on the reel



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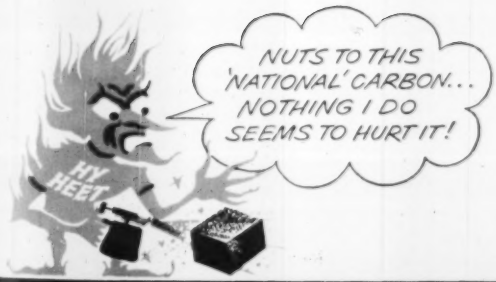

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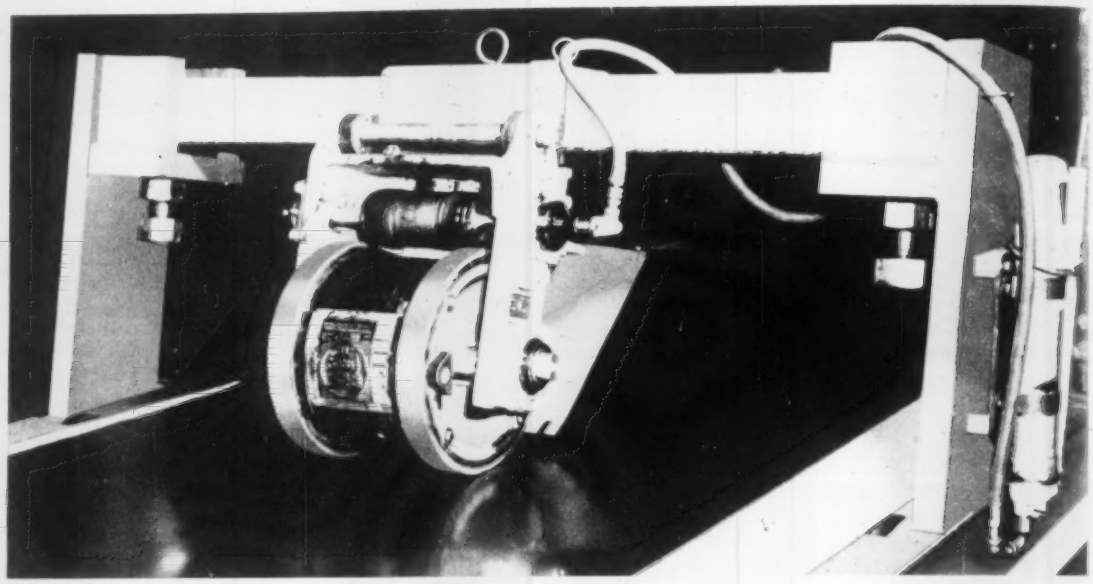

Marking sheet on modern shear line. This device also is used for stenciling hot and cold rolled and continuous line galvanized sheets

identification mark on each sheet or coil as it emerges from the temper mills or shear lines. This new unit is fundamentally a revolving cylinder, to which a rubber printing die is fastened. As the cylinder is revolved by the rubber drive tires in contact with the steel passing beneath, a clean, legible, inked impression is made.

The coil and sheet printer is suitable for permanent or water soluble marking on all types of steel coming from temper mills, hot or cold reducing mills, or continuous galvanizing lines. It can be used for marking on a flat surface, or it can be mounted directly on top of the coil at the reel. It makes a perfect printing impression, and also gives the inspector more time with far less effort to do a better job.

An important part of the coil and sheet printer is its internal feed inking unit. This thoroughly tested semiautomatic unit eliminates the need for brushing ink on the ink roll, and permits excellent control of ink distribution. Ink in the fountain is readily replenished from a reservoir mounted nearby while the printer is in operation. Re-inking of the ink roll is quickly and easily accomplished without stopping mill or line operations.

The printing plate locking device is a positive, quick-acting mechanism which securely locks the printing plate into position, and eliminates the possibility of its flying off at any mill speed. By the use of the Matthews interchangeable rod-style rubber type it is easy for the operator to make quick changes of inspection and identification data. This rubber type is securely locked in the mortises of the printing plate by a metal pin passing through the type body. It is particularly important that the type be held securely, especially when the unit is used on some of the newer high-speed temper mills, now operating at speeds of 3000 feet per minute, or more.

Many actual mill run trials and tests were made to find the right material for the drive tires. Ordinary rubber, many rubber synthetics, and almost all of the common metals were used before a special rubber was found that would give long, satisfactory service and would not mar or streak the finish of some grades of steel. These rubber drive bands, in combination with the solid construction of the printer, give the unit sufficient weight and balance to eliminate "bouncing around" in operation.

Closeup of printing die showing interchangeable rod-style type

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by

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CASTING REDESIGN

Requires Correlated Teamwork

TODAY'S key to improved steel casting production and contributing significantly to the solution of many complex engineering design problems is the practical application of the results of intensive research and product development activities. This was stressed at the National Technical & Operating Conference of the Steel Founder's Society of America held recently in Cleveland.

Launching discussions of engineering-based product development, Arthur S. Breithaupt, vice president, Dodge Steel Co., spoke on "Profits and Good Will Through Product Development." As such, product development sensibly should be divided into two phases, he said: Intelligent conversion to steel castings of parts made by competing materials and those made by means of fabrication; and redesigning of existing steel casting designs to foundry-engineered products for more economical production and greater serviceability. Aside from price and quality considerations, ultimate objective in development of a new steel casting design is directed to weight reduction, simplification and streamlining.

Teamwork Necessary — Entirely satisfactory and profitable conversion procedure can be readily achieved, he said, through thoughtful, closely correlated teamwork of engineering, production and sales departments, with specific attention to actual service requirements of the part and proper consideration of foundry engineering techniques.

As an example, he cited the case of a rubber company encountering recurrent breakage and rapid wearing in cast iron tension yokes on braiding machines used in manufacture of rubber air hose, and solution of the problem through conversion to steel castings via the teamwork approach. The cast iron yokes were designed to supply tension to the thread used for braiding the hose. When the thread broke, force of a tension spring snapped the yoke against its mounting and frequently broke the end of the part. Another cause of failure in the cast iron yoke (48 to a machine) was that friction resulting from the tension and speed of the thread passing through the eyelet end very quickly wore out the eyelet. Such failures due to breakage or wear resulted in repetitive machine shutdowns and costly delays pending repair or replacement.

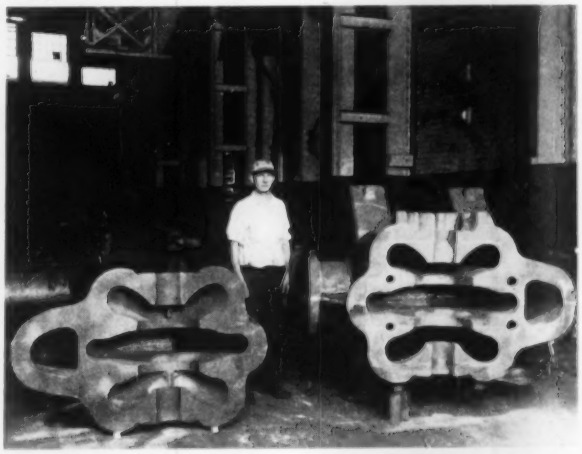
Breakage Eliminated—Consultation and collaboration of the steel foundry engineering team led to solution of the problem. Conversion of the complex part to alloy cast steel brought an end to breakage, and eyelet wear was alleviated considerably by induction hardening. One result: The customer has ordered 1700 redesigned parts, in two different sizes.

Redesign for cast-weld construction, often affording distinct advantages for the customer, was described in the following example: A pump manufacturer sought quotations on a new centrifugal pump design. As submitted, the design incorporated a by-pass chamber imbedded in the housing's heavy sidewall, formed by a small core leading from the main internal body core; size and position of this chamber core made it difficult to produce the core and extremely hazardous to produce a satisfactory casting.

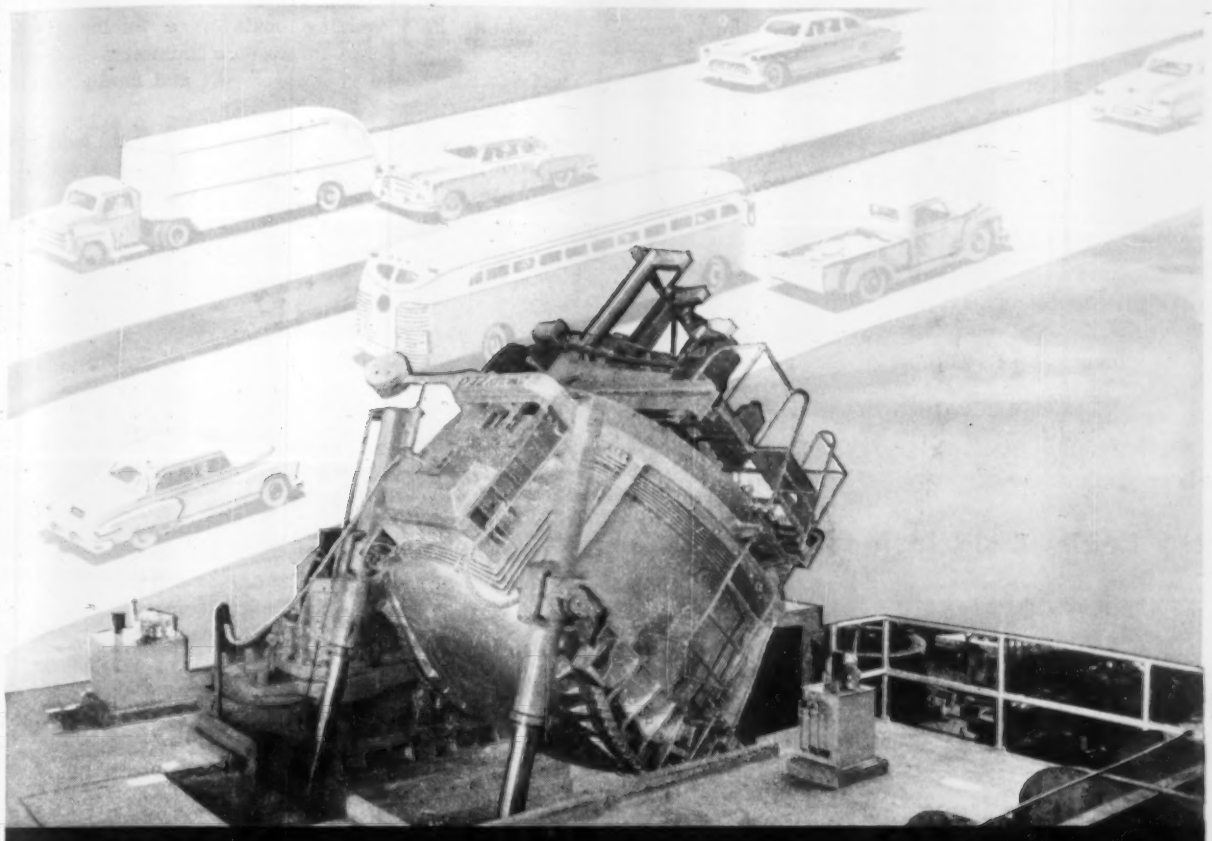
Conferences between the foundry and customer engineering groups brought agreement on necessary design changes to meet service requirements in the entirely new pump application, in which size and weight were vital factors. As a result, the housing was redesigned to be made as two steel castings, the by-pass chamber to be a separate casting and welded on to the body casting. The wall sections were reduced providing an overall weight saving of 27 pounds or a competitive weight advantage of 12 per cent. Greater pump efficiency also was achieved by redesign leading the discharge throat away tangentially, rather than from the impeller chamber in an arc, as in the original design.

Cast-Weld Construction Gains—Engineering and development of new castings has many ramifications

Nodular Iron Used in Pump Casing



NODULAR IRON castings have graduated to the large sizes as this pump case made by Farrel-Birmingham Co. Inc. in its foundry at Derby, Conn., illustrates. The case and cover have a combined weight of 8314 pounds. DeLaval Steam Turbine Co., Trenton, N. J., initiated use of nodular iron for pump casings of this type. Satisfactory hydrostatic tests on these units show slight deflection at 750 psi and no leakage at 1500 psi



WORLD-WIDE RECOGNITION

among the leading automotive manufacturers, too

Lectromelt Furnaces are now being built for the European automobile manufacturers, Fiat and Renault, and for a number of the industry's leaders in the United States—further evidence of the high esteem in which these furnaces are held by leading industrialists all over the world.

Parts Suppliers, too

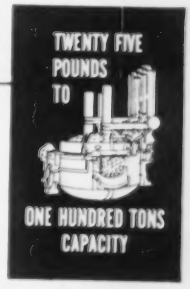
Lectromelt Furnaces have long been employed in making automotive parts: Piston rings since 1919, cylinder blocks since 1927, malleable products since 1925, as well as crankshafts and other products.

Lectromelt Furnaces offer you rapid top-charging, high-speed melting, accurate control of quality, low-cost operation. Lectromelt field engineers are available to help you keep abreast of the latest developments in the use of your furnace.

For Bulletin No. 7 giving you further data, write Pittsburgh Lectromelt Furnace Corporation, 323 32nd Street, Pittsburgh 30, Pennsylvania.

Manufactured in... CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2... ENGLAND: Birlec, Ltd., Birmingham... SWEDEN: Birlec, Elektkougnar A B, Stockholm... AUSTRALIA: Birlec, Ltd., Sydney... FRANCE: Stein et Roubaix, Paris... BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege... SPAIN: General Electrica Espanola, Bilbao... ITALY: Forni Stein, Genoa.

WHEN YOU MELT... MOORE RAPID *Lectromelt*



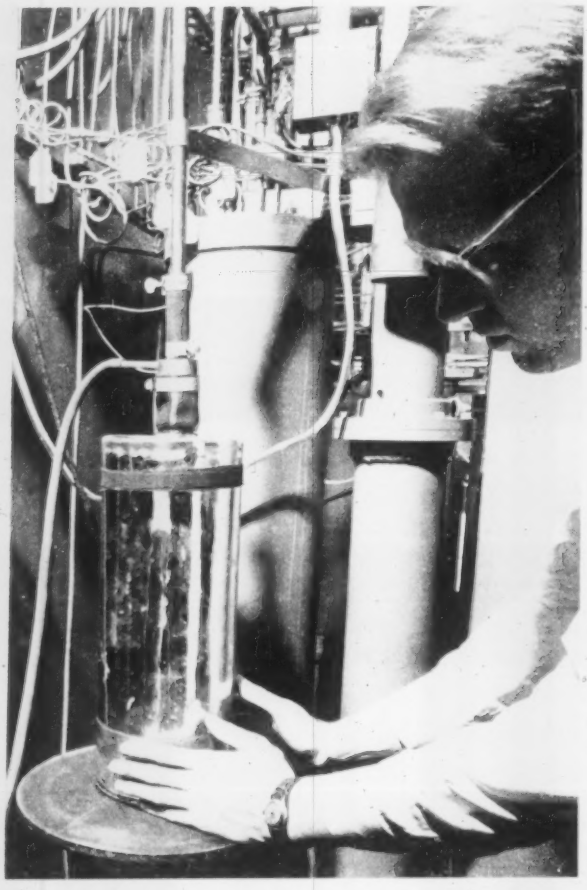
and is handled by many methods by various companies, according to A. H. Suckow, metallurgist, Symington-Gould Corp. In his paper on "Product Engineering and Development of New Casting Design" he put particular emphasis on gains being made via redesign and conversion to cast-weld construction. Most castings, he said, especially those of a complex nature, lend themselves to redesign as cast-weld structures. Attainment of a satisfactory redesign results from careful study of the functional and structural design features, as balanced against utilization of the simplified components to specific needs.

These requirements he listed: Reduce manufacturing cost by division of the casting so as to eliminate coring; economical distribution of metal for best weight-strength ratio and avoidance of stress concentration; hold welding costs to a minimum by proper location of welds; have a minimum number of run-out tabs and backup plates; and finally stress relieve the welded assembly.

As an example of successful developmental work of this type, the speaker cited redesign carried out by his organization in conversions of freight car center fillers and strikers, parts which a few years ago were virtually written off by many foundries as lost tonnage, due to increasing use of weldments made up of rolled steel plates.

Three Castings Welded Together—Because of the costs entailed in coring original casting design, car builders developed a weldment design for the center filler, consisting of 17 parts and requiring 672 lineal inches of welding. In order to compete with this type of construction, representing a considerable tonnage figure, it was necessary to redesign the original one-piece cast center filler. After much experimentation and combined effort of sales, engineering and production personnel, a new design consisting of two cast steel side pieces and a separate center piece was evolved. This new three-piece cast-weld structure enabled a reduction of core weight from 308 to 3 pounds per casting; resulted in a reduction of 638 inches in lineal weld; and a 30 per cent reduction in weight. Other gains were reflected in increase in daily output of foundry molds, considerable reduction in the cubic content of sand necessary per mold, and reduction in labor handling costs.

It's Really Cold Inside the Flask



LIQUID HELIUM is collected in a Dewar flask at the liquefaction plant in General Electric Co.'s research laboratory in Schenectady, N. Y. Temperature of the liquid helium, coldest substance known to man, is minus 452° F. The laboratory is equipped to produce temperatures within a degree of absolute zero or nearly minus 460° F. Such low temperatures are used to study behaviors of metals with the aim of finding better conductors of electricity. Many materials have no electrical resistance at these extremely low temperatures

Water Reactivates Aluminum Solder

An aluminum solder flux that can be reactivated after drying out by the addition of tap water is being made available by All-State Welding Alloys Co. Inc., White Plains, N. Y. Flux is said to be usable with aluminum solder rods of any commercially available brand in an open flame and, under certain conditions, with a soldering iron.

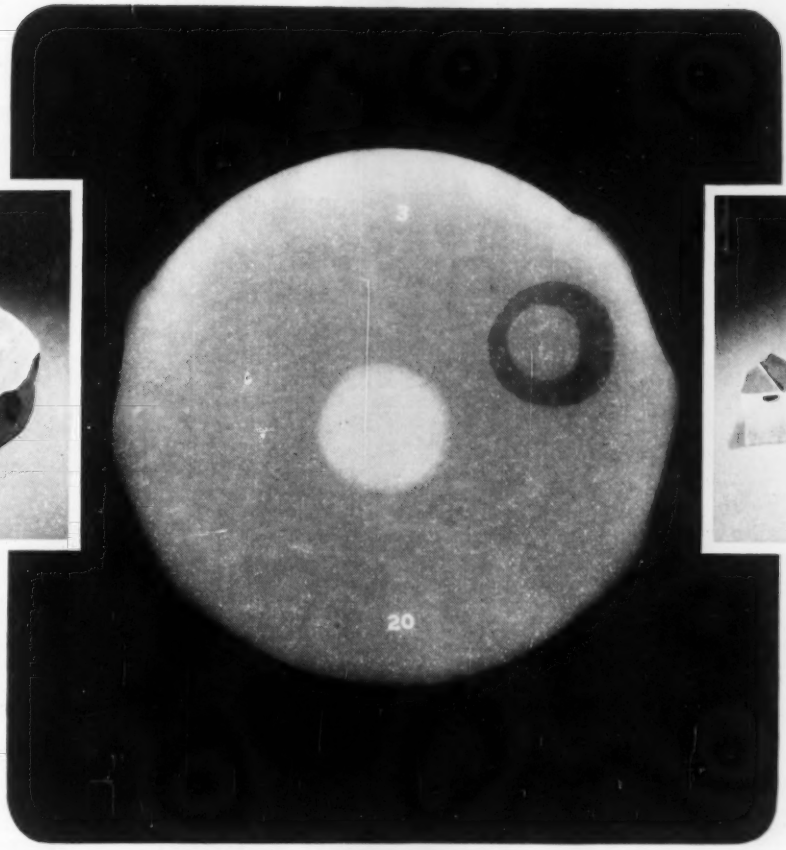
It is said to make solder flow into the joints and is characterized by a tinning action that enables soldering aluminum to other metals, such as copper, steel and bronze. Known as No. 39 Brazaloy flux, it cleans the surface to be soldered and deposits the coating of a nature permitting the aluminum solder to flow and adhere.

Catalog Illustrates Circulators

Designed for power station service is a line of condenser circulators in standard sizes to 100,000 gallons per minute and in special sizes to 200,000 gallons per minute, illustrated in catalog No. G-1050, issued by Economy Pumps Inc., Hamilton, O.

Pumps described are vertical, mixed-flow units of large capacity and low head. It is said that they are capable of handling water of every type of chemical analysis by making use of special metals. Pull-out type units described permit removal of all operating parts without pulling out the complete pump or disturbing pipe connections.

Aluminum alloy casting 2¼ x 1¼" for aircraft accessory part.



Radiograph which revealed defect in casting.

Section reveals hole detected by radiography.

Minutes of Radiography saved hours of machining

AFTER machining, this aluminum alloy casting was to be an important part in an aircraft accessory, vital to high-altitude flying. The finished part was needed quickly by the customer. Design specifications demanded high quality.

This was no time to wait for machining to disclose any defects. There was too much to lose—setup time, machining time, take-down time, as well as the reputation of the foundry.

Radiography saved all that. In a few minutes it revealed a defect that caused rejection of the rough casting at the foundry. Other castings, proved sound by radiography, were sent to the customer.

Cases like this show how more and more foundries are able to release only sound castings. Perhaps even more important, radiography is showing how to make consistently sound castings, by picturing the internal effects of changes in gating, venting, chilling, pouring temperature, and other variables.

Ask your x-ray dealer to explain how radiography can help you increase yield and cut costs.

EASTMAN KODAK COMPANY
X-Ray Division, Rochester 4, New York

Radiography . . .

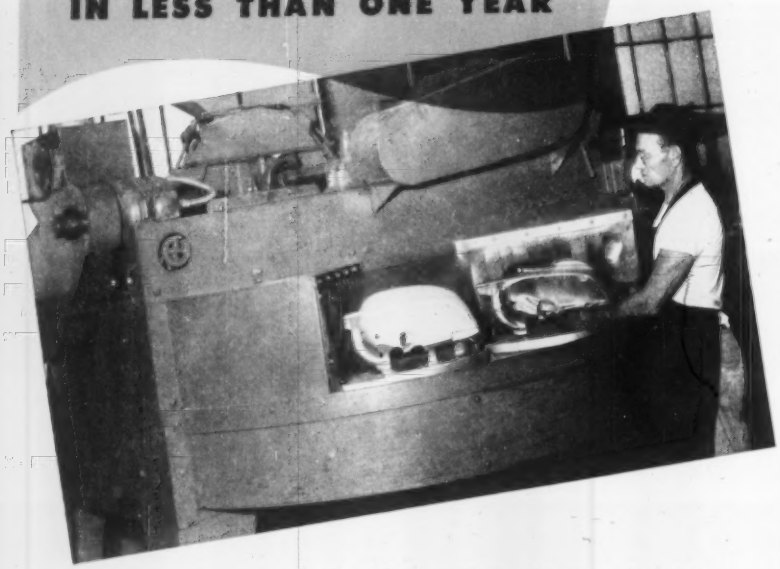
another important function of photography

Kodak
TRADE-MARK

WHEELABRATOR®

AIRLESS BLAST CLEANING RETURNS INVESTMENT IN LESS THAN ONE YEAR

for JOHNSON "Sea-Horse" motors



☆ REDUCED POROSITY

☆ IMPROVED FINAL FINISHING

☆ LESS HAND POLISHING

☆ INVESTMENT RETURNED IN 10 MONTHS

At the Johnson Motor Division, Waukegan, Illinois, two Wheelabrator machines not only returned the entire cost of the equipment, but also made a 25% profit on the investment . . . in one year.

At the same time "Wheelabrating" has provided these extra benefits: Finishing operations on aluminum die castings have been improved by providing a more uniform surface; at least 40% of the porous castings that would have been "leakers" now pass the water test after shot peening; minor imperfections which previously required hand buffing are now removed, with the result that polishing takes less labor time and paint adheres more firmly; many of the smaller burrs and flash are removed, which greatly reduces the cost of manual deburring.

Benefits like these are too important to overlook . . . perhaps the Wheelabrator can do the same for you . . . why not investigate it soon?

New, informative book gives complete, concise information on all phases of airless blast cleaning. Write today for Catalog No. 74-A.

American

WHEELABRATOR & EQUIPMENT CORP.
509 S. Byrkit St., Mishawaka 5, Ind.

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

CALENDAR OF MEETINGS

† Denotes first listing in this column

Jan. 22-26, American Institute of Electrical Engineers: Winter general meeting, Hotel Statler, New York. Institute address: 33 W. 39th St., New York 18.

Jan. 22-26, American Society of Heating and Ventilating Engineers: 57th annual meeting and exposition, Commercial Museum, Philadelphia. Society address: 51 Madison Ave., New York 10. Exposition managed by International Exposition Co., 480 Lexington Ave., New York.

Jan. 24-25, National Industrial Conference Board: Conference on mobilization, Hotel Astor, New York. Board address: 247 Park Ave., New York 17.

Jan. 25-26, Steel Plate Fabricators Association: Meeting, Palmer House, Chicago. Society address: 37 W. Van Buren St., Chicago 5.

Jan. 28-Feb. 1, Associated Equipment Distributors: 32nd annual meeting, Stevens Hotel, Chicago. AED address: 360 N. Michigan Ave., Chicago 1.

Jan. 29-Feb. 1, Institute of Aeronautical Sciences: Annual meeting, Hotel Astor, New York. Institute address: 2 E. 64th St., New York 21.

Feb. 1-2, Society for Advancement of Management: Annual spring management conference. Sponsored jointly with Northwestern University centennial committee, Chicago chapter, SAM, address: 53 W. Jackson Blvd., Chicago 4.

†Feb. 7, Bituminous Coal Research Inc.: Annual meeting, Deshler-Wallick Hotel, Columbus, O. BCR address: Southern Bldg., Washington 5.

Feb. 8, American Coke & Coal Chemicals Institute: Regional meeting, Congress Hotel, Chicago. Institute address: 711 14th St. N.W., Washington 5, D. C.

Feb. 9, National Welding Supply Association: Western zone meeting, Hotel St. Francis, San Francisco. Association address: 505 Arch St., Philadelphia 6.

Feb. 14, Steel Kitchen Cabinet Institute: Annual meeting, Hotel Cleveland, Cleveland. Institute address: Engineers Bldg., Cleveland 14.

†Feb. 16, Eastern States Blast Furnace Association: Meeting, William Penn Hotel, Pittsburgh.

Die Steel Readily Machinable

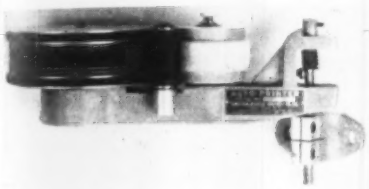
Possessing the physical characteristics of developing a minimum amount of heat checking is a newly developed hot working die steel offered by Heppenstall Co., Pittsburgh. Marketed in the form of solid press dies, insert dies, upsetter dies and punches, the new steel, known as Prestem, is said to resist the flow of hot metal during press forging operations.

It is also claimed to have high impact resistance and an ability to be water cooled during press forging operation. It is made in three hardness ranges: A, from 2.95 to 3.10 Brinell B D or 41 to 45 Rockwell C; B, with 3.15 to 3.30 Brinell B D or Rockwell 36 to 40 Rockwell C. It is also made in a prehardened, untempered condition, having a hardness range of 3.10 to 3.25 Brinell B D or Rockwell 38 to 42 C for customers' tempering after machining to a precipitation hardness beyond machinability.

New Products and Equipment

Marks on the Move

Automatic dating, coding or marking production runs of cartons and packages while they are moving on a conveyor is possible with the Auto-Printer made by Industrial Marking Equipment Co. Inc., 454 Baltic St., Brooklyn 17, N. Y. Friction between marker and moving carton or package will do necessary imprinting. It will automatically spot-print legends.



In operation, the printing drum spot-prints, turns immediately in one-half revolution or less to a positive stop, then is ready to repeat the cycle. There is no oscillation of the printing drum. Inking is through felt roller that has an internal ink reservoir. Device uses quickly interchangeable rubber type.

Check No. 1 on Reply Card for more Details

Versatile Metallographic Aid

A Universal camera microscope for metallurgical work is available from William J. Hacker & Co. Inc., 82 Beaver St., New York 5, N. Y. Made in Austria the unit has a built-in camera and a magnification from 4.5 to 2200X.

Features of the instrument are instant changeover from bright to dark ground illumination and instantaneous transition from visual observation to photography and from ordinary to polarized light. Methods of illumination include vertical (bright-ground), oblique internal (bright-ground), flat oblique multilateral (dark-ground) and unilateral external (dark-ground). The unit can conveniently be used for micrography with a miniature camera.

Check No. 2 on Reply Card for more Details

Loading Versatility

A variety of materials such as sand, snow, gravel, coal, etc., can be handled without belt changes or use of special attachments by the Loadall made by N. P. Nelson Iron Works Inc., Clifton, N. J. The unit travels under its own power at road speeds up to 10 miles per hour. Working speeds are up to 6½ miles per hour.

It loads heavy materials at from 1¾ to 2¼ cubic yards per minute and

snow from 6 to 8 cubic yards per minute. Power is provided by a four cylinder, air-cooled gasoline engine.

Check No. 3 on Reply Card for more Details

Flexible Lathe Operation

A total of 56 feeds and threads produced by the quick change feed box without changing gears in the enclosed quadrant, feature the line of heavy duty engine lathes made by Niles Tool Works Co. Division, Baldwin-Lima-Hamilton Corp., Hamilton, O. The lathes range in size from 40 to 80 inches and up.

Lathes are powered by either alternating or direct current motors. Forty-inch heavy engine lathe is of semisteel and is ribbed to resist all strains and stresses developed during the turning operations. Both power and hand longitudinal, cross and angular feeds are provided for the carriage and compound rest which supports the English type tool block. A fine-toothed clutch which can be snapped in and out engages all carriage feeds. Hand adjusting screws are equipped with micrometer dials for accurate positioning of the tool. A 1½-hp motor mounted on the apron permits longitudinal traverse without the danger of a rapidly revolving leadscrew.

Drive for the 40-inch lathe is furnished by a 40-hp constant speed ac motor, or a 3 to 1 speed ratio dc motor, each furnishing a reserve of power for all operations. Motor is floor-mounted behind the headstock and is adjustable to take up slack in the V-belts connecting the motor to the drive shaft.

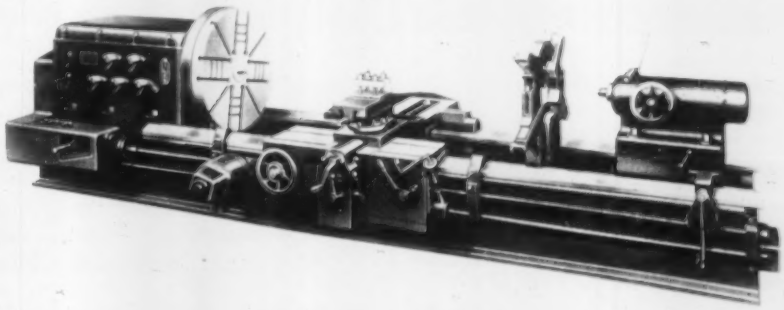
Check No. 4 on Reply Card for more Details

Drills, Countersinks Faster

Cotter pin holes in clevis pins and screws can be drilled and countersunk on both sides at 1500 per hour with a machine developed by Govro-Nelson Co., 1933 Antoinette, Detroit 8, Mich. Machine is fully automatic employing four model KH Govro-Nelson automatic drilling units which operate simultaneously in conjunction

with and interlocked with a Geneva type eight-station indexing dial and a hopper part-feeding mechanism.

Automatic stopping in the event a tool breaks or a malformed part jams the mechanism is incorporated in the design. The machine will slow down in case a tool becomes extremely dull. Indexing mechanism cannot



operate unless all tools are out of the work and drilling units cannot operate during the indexing.

Check No. 5 on Reply Card for more Details

Variable Speed Shearing

Full capacity continuous shearing within its entire speed range of 30 to 200 rpm is a feature of the Di-Acro Vari-O-Speed powershear introduced by O'Neil-Irwin Mfg. Co., Lake City, Minn. Cutting cycle can be quickly adjusted to the fastest cutting speed at which the operator can feed material for any given shearing operation, providing maximum operator productivity. Necessity of en-

gaging the clutch for each cutting stroke has been entirely eliminated.

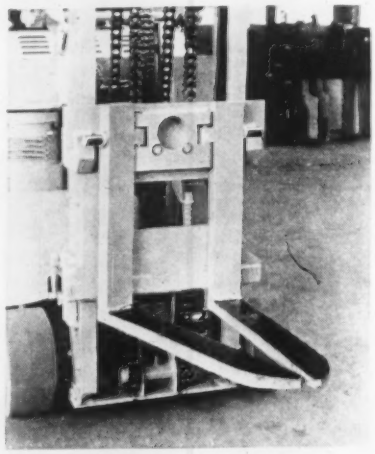
Unit is offered in 12 and 24-inch sizes with a material capacity of 16 gage sheet steel. A U. S. Varidrive motor in shear can be adjusted to the exact shearing speed required for each cutting operation.

Check No. 6 on Reply Card for more Details

Pivoted Industrial Fork Trucks

To aid in maneuvering loads in congested areas, Elwell-Parker Electric Co., Cleveland, O., has developed vertically pivoted forks for use on high-lift power industrial trucks. Device is furnished as an integral part on some models of the company's fork trucks, or may be supplied as an attachment for standard model trucks. Tines are used either in the ordinary way or may be quickly adjusted for unusual conditions relating to size or position of the load.

Each tine of the fork swings inward from normal straight forward position, facilitating its entrance into a pallet or under a skid. They may be set so that their points come almost together in the form of a V or so that one tine remains in normal position while the other is moved far enough for the outer end to touch it. With either adjustment it is not nec-



essary for truck and pallet to be in alignment. Tine is adjusted by moving it sideways, spring tension holding it in position pointing either inward or straight ahead.

Check No. 7 on Reply Card for more Details

Speedier Argon Welding

Hand torch and automatic wire drive unit for argon metal arc welding is announced by Linde Air Products Co., 30 East 42nd St., New York 17. The consumable electrode serves as the filler metal and is fed from a coil into an argon-protected atmosphere at a steady predetermined rate.

Unit consists of FSH-4 argon metal hand-welding torch and the FSM-2 rod feed unit. It is particularly adaptable for welding aluminum in ranges of thickness from $\frac{1}{8}$ to $1\frac{1}{2}$ inches. An electronic governor for accurate and uniform control of rate of rod feed is provided and can vary from 80 to 380 inches per minute.

Check No. 8 on Reply Card for more Details

Extinguishes Metal Fires

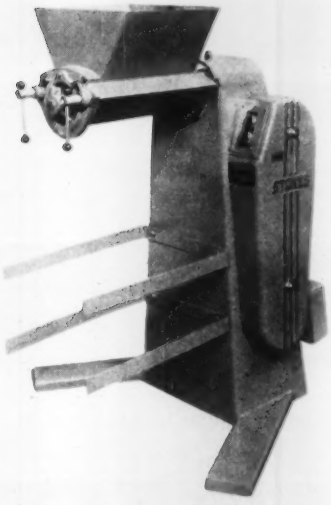
Effective on fires of magnesium, sodium, potassium, zinc, powdered aluminum, etc., is a pressurized extinguisher developed by Ansul Chemical Co., Marinette, Wis. Met-L-X dry powder, the extinguishing agent fuses and forms an air-excluding crust over the burning metal. Extinguishing agent is moisture repellent, free-flowing, nontoxic, noncorrosive and nonabrasive and it will not conduct electricity or deteriorate under normal conditions.

Metal fires may be fought at a safe distance, minimizing danger of burns. Extinguishing agent cannot be contaminated by water or other foreign substances as it is sealed in the container. Extinguishers are made in 30, 150, and 300-pound sizes. Automatic piped systems are also available.

Check No. 9 on Reply Card for more Details

Granulator Leakage Reduced

Stainless steel construction and design that eliminates material leakage are features of the oscillating granulator made by F. J. Stokes Machine Co., 5900 Tabor Rd., Philadelphia 20, Pa. The part of the hopper in model 43B which seats the screen has been designed to provide a longer and more accurate seat to prevent material



from working around the ends. Screen end clamps hold it tightly in position.

Entire drive mechanism including worm, worm gear, crank, segment and pinion is completely sealed in oil increasing its normal life. Protection against dust and dirt is accomplished by mounting the motor within the granulator housing with only the end exposed for ventilation.

Check No. 10 on Reply Card for more Details

Precision Parts Classifier

Critical tolerances of precision parts such as balls, rollers, pistons and piston pins are classified in increments of 0.0001-inch by a Selectronic gage made by Pratt & Whitney Division, Niles - Bement - Pond Co., West Hartford 1, Conn. It permits broader production tolerances in the manufacture of such parts by providing a selective control for precision fitting at time of assembly.

Parts are loaded into a magazine-feeding mechanism from which they

are automatically fed under an Electrolimit gaging head and subsequently routed into the proper classification bin. The Electrolimit gaging head operates a photoelectric control unit which registers the size of the part according to its thickness and directs it to an ejection chute

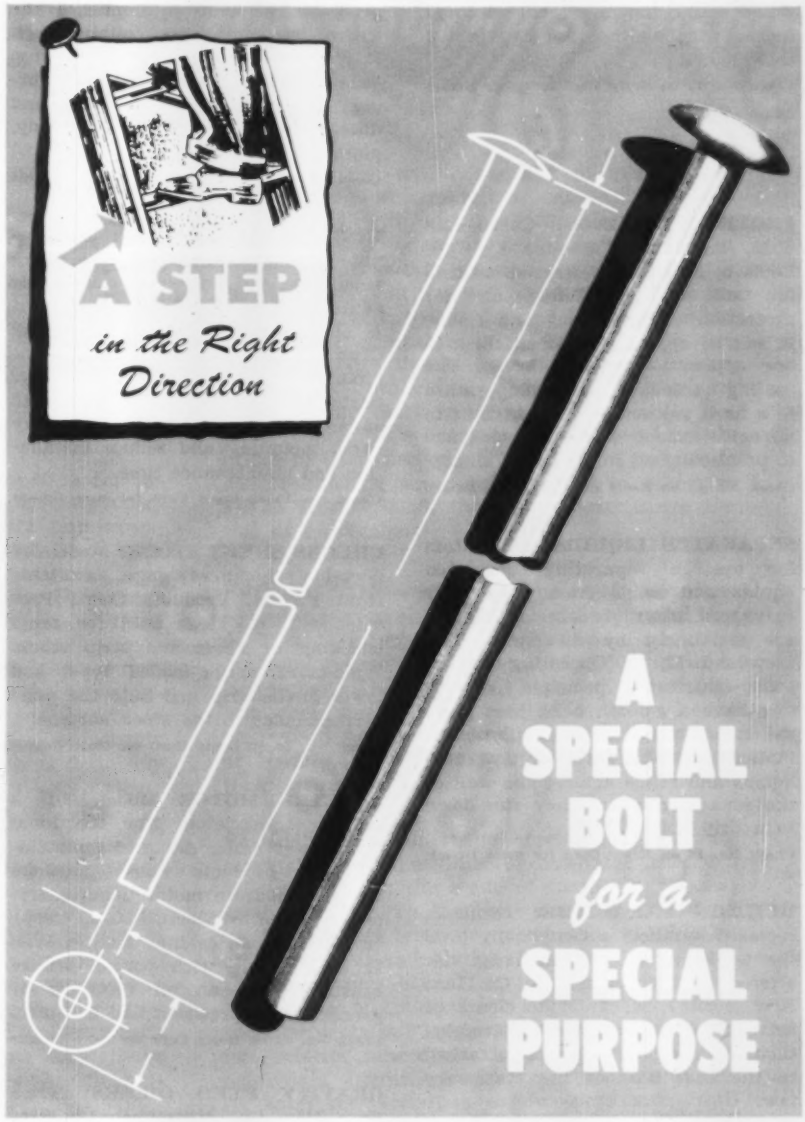
and then to the classification bin. Only one set of masters, a minimum and a maximum, is needed to adjust the gage. Individual increment settings, adjustments and tuning are not required. Gages are custom designed and built to meet demands of specific industrial applications.

Check No. 11 on Reply Card for more Details

Crankshaft Regrinder

Diesel engine crankshafts up to 18 feet long can be handled in the supersized crankshaft grinder made by Lempco Products Inc., Dunham Road, Bedford, O. The huge grinding wheel, 4½ feet in diameter on the largest model, moves hydraulically on precision ways from journal to journal at selected speeds from 1 inch to 35 inches per minute. Hydraulic controls are also used to give rapid, smooth approach and retraction to the grinding wheel. Adjustment for various lengths of crankshafts is made through movement of the headstock with the final setting made at the tailstock through an adjustable quill.

Three models are available, accommodating crankshaft swings varying from 32 to 50 inches and lengths from 108 to 216 inches. Grinding



Ⓑ Special Ladder Bolt

Won't let you down...whether it's of wood or metal fabrication there's a place for Ⓑ Special fasteners. Many wooden products such as ladders, chairs, beds and tables get their strength from the Ⓑ line of bolts. Your problems cheerfully become ours when it comes to special bolts and headed rods.

Bolts...by the Carton or Carload

BUFFALO BOLT COMPANY
Division of Buffalo-Eclipse Corporation
NORTH TONAWANDA, NEW YORK
Sales Offices in Principal Cities. Export Sales Office: Buffalo International Corp., 50 Church Street, New York City

Our Specialty is "SOMETHING SPECIAL"

wheel diameters vary from 36 to 54 inches with widths ranging from 1 to 5 inches.

Check No. 12 on Reply Card for more Details

• • •

PROTECTS LININGS: Carbo-Kote 6020, made by Carboline Co., St. Louis 5, Mo., is a protective coating for tank and duct linings and for protection of equipment and floors. It can be applied 0.012-inch thick in one application with a brush. The coating hardens at room temperature to a hard protective film resistant to all acids except oxidizing types and to practically all solvents and alkalis.

Check No. 13 on Reply Card for more Details

SEPARATES LIQUIDS: Separators for use in separating unwanted liquids and solids from steam, air or vapors under pressure or vacuum are announced by Swartwout Co., Cleveland 12, O. Operating on the helico-centrifugal principle, separators have a smooth helix that gives the steam or air a positive whirling motion which throws unwanted liquids and solids against the wall of the separator where they run down to a drip pocket.

Check No. 14 on Reply Card for more Details

BUILT-IN PARALLELS: Built-in, recessed parallels automatically level the work in the new drill jig vise offered by Montgomery & Co. Inc., New York 7, N. Y. Wide clearance between jaws is designed for straight-thru drilling. Drill jig can be attached to the cast boss of the stationary jaw.

Check No. 15 on Reply Card for more Details

PHASE SEQUENCE INDICATOR: Model 40 phase sequence indicator, introduced by Associated Research Inc., Chicago 18, Ill., requires no batteries or binding posts. It has no moving parts and weighs less than a pound.

Check No. 16 on Reply Card for more Details

NO SPURTING: Spray gun spurting is eliminated by the new Graco Mogul-type Powerflo pump, made by Gray Co. Inc., Minneapolis 13, Minn. The air-operated, high volume, material handling pump is equipped with a device called the Evenflo which prevents spurting.

Check No. 17 on Reply Card for more Details

COPYING MACHINE: BW Copyflex, introduced by Charles Bruning Co. Inc., New York, N. Y., uses the Diazo process. The unit accomplishes the entire copying process within itself. It requires no inks, tray developing, dark room, subdued or special lighting. It has no annoying fumes and does not require any make ready, plumbing or exhaust fans.

Check No. 18 on Reply Card for more Details

INSTANT CONVERSION: Designated as type CRA, a new, very small size 00 multi-pole convertible contactor is offered by Arrow-Hart & Hegeman Electric Co., Hartford, Conn. It is said to provide instant circuit conversion without additional parts, by reversible contacts and to save control panel space, simplify panel mounting and reduce installation and maintenance time.

Check No. 19 on Reply Card for more Details

CHECKS SHEET STOCK: Model 644 portable thickness gage, available from Federal Products Corp., Providence 1, R. I., is used for rapid checking of sheet and strip stock. Wide-faced, spring-loaded upper and lower anvils grip and hold the gage perpendicular to the stock surface.

Check No. 20 on Reply Card for more Details

ELECTRIC MOTOR: Model 800D, a four pole, skeleton type fractional horsepower motor designed for building into products whose housings make a separate motor unnecessary, is announced by Electric Motor Corp., Howard Industries Inc., Racine, Wis. It is available with porous bronze bearings with an oil reservoir or grease sealed precision ball bearings.

Check No. 21 on Reply Card for more Details

GRAVITY FEED OILERS: Trico Fuse Mfg. Co., Milwaukee 12, Wis., announces gravity feed oilers with 10-ounce, 1-pint, 1-quart and 2½-quart capacity Pyrex glass or Lucite plastic reservoirs. Units also feature lock ring or ratchet feed adjustment. They are designed to feed any predetermined number of drops per minute.

Check No. 22 on Reply Card for more Details

FROM DRILL TO HOIST: A 1-inch drill model 163, made by Skilsaw Inc., Chicago, Ill., combined with American Handiwinch makes a complete power hoist unit in a matter of minutes. An adapter kit that requires no special tools for mounting, locks drill and Handiwinch in perfect alignment. Unit has a hoisting capacity of 1000 pounds at 10 feet per minute.

Check No. 23 on Reply Card for more Details

WITH PILOT LIGHT: A new Sod-R-Braze acetylene-air torch featuring a built-in pilot light, a diaphragm type valve and a lightweight plastic handle is announced by National Cylinder Gas Co., Chicago 11, Ill. Valve is designed and positioned so that operator can turn torch on and off, adjust flame and regulate pilot light with the thumb of the hand holding the torch. Six tips, with individual mixers, ranging from 3-32 to ¼-inch in diameter are available.

Check No. 24 on Reply Card for more Details

QUENCHING, CONVEYING UNIT: Designed for continuous heat treating of individual pieces, is the quenching and conveying equipment, introduced by Klaas Machine & Mfg. Co., Cleveland, O. Oil in the tank is recirculated and cooled. The metal belt allows quenched parts to drain as they move up the inclined conveyor which is driven by a self-contained power unit.

Check No. 25 on Reply Card for more Details

FEATURES LOW TORQUE: Smiths model A. T. H. 10 dual range hand tachometer, offered by Equipoise Controls Inc., Mt. Vernon, N. Y., features extremely low torque, 0.40-ounce inch on lowest range. Ranges are 0/1000 rpm and 0/5000 rpm. Instrument is provided with knurled knob for range selection and pushbutton on either side of instrument for releasing and/or holding pointer at machine speed indication.

Check No. 26 on Reply Card for more Details

HARDNESS TESTER: Sklerograf, a hardness tester made by Kurt Orban Co. Inc., New York 6, N. Y. is based on the rebound principle. Instrument is placed vertically on top of the object to be tested and catch is released. Rebounding bar hits the test object and rebounds. Through a device in the head of the tester, rebounding bar is caught in mathematically exact position. Reading of hardness degree is possible through scale on the front of the instrument.

Check No. 27 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

The Market Outlook

DEFENSE steel requirements are increasing rapidly. Mill quotas for military orders are being stepped up by Washington, and by early February volume will show a marked rise. This week the Steel Task Committee meets to consider second-quarter distribution of steel against not only existing allocation programs, including railroad freight cars, but against still other programs still in the formative stage. Mandatory mill tonnage set-asides of the various products for DO accounts are being upped sharply percentagewise.

ALLOCATIONS— Full-scale allocation for locomotive construction and repairs appears a certainty. Emergency needs of the petroleum industry, manufacturers of machine tools and farm equipment, builders of barges and trucks, and other groups are under close study. Preference schedules may be set up for certain of these classifications shortly. Since rolling mill schedules have been established for remainder of first quarter, non-rated buyers will feel the added inroads of defense requirements on supplies when it comes to placing new orders. The supply squeeze on civilian goods producers is definitely tightening. Automobile producers are cutting production this quarter 20 to 25 per cent.

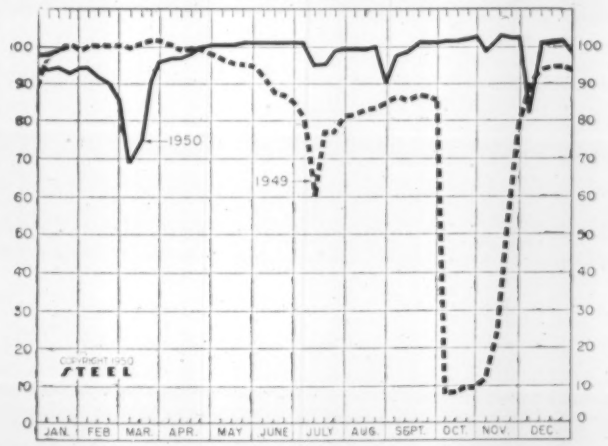
LIMITATIONS—Stainless steel and nickel will be added soon to the list of products barred for further use in civilian goods manufacture. These items have been increasingly difficult to obtain for some time. Latest important limitation on use of steel applies to commercial construction. Starts on such building, except for emergency cases, are banned until Feb. 15, after which date licenses will be granted on only those projects deemed essential to defense, health, welfare, or to prevent hardships.

PRICES—Steadiness characterizes all sections of the steel market pricewise. Expectations are a freeze order will come out of Washington soon, perhaps in a matter of days. One guess is that Feb. 1 will be set as the effective date. Some rollback of scrap prices is expected in certain quarters but the whole situation is still very much up in the air. STEEL's weighted index on finished steel is firm at 171.92, as is the arithmetical composite at $105.55. Pig iron also is unchanged with No. 2 foundry, $52.54, basic, $52.16 and malleable, $53.27. "Raiding" of eastern scrap markets by midwestern mills last week resulted in a break through of the formula prices in that district. STEEL's price composite on steelmaking scrap reflects this in a rise to $46.33 from $45.50, the first change since the end of November.

PRODUCTION—Steel mills boosted operations ½ point last week, lifting scheduled production to 1,991,000 net tons, an all-time high. The previous record output was 1,986,600 in mid-November. The estimated national ingot rate last week was 99.5 per cent of capacity, based on revised national capacity which now stands at 104,229,650 net tons, increase of 4.8 million tons during 1950.

EXPANSION—With the steelmakers pushing production to the limit of available facilities talk is heard in the trade of further expansion in the making. In the East word is circulating to the effect at least two producers, in addition to U. S. Steel and National Steel, plan mills in Delaware river area. Two long-established interests had originally been suggested as behind these projects but lately attention has veered to two relative newcomers to the industry as the principals. Identified with reports of these latter interests' activities are a large strip mill northeast of Philadelphia, possibly near Bristol, Pa., and a wide flange shape mill somewhere around Phoenixville, Pa.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Jan. 20	Change	Same Week 1950	Same Week 1949
Pittsburgh	98.5	+ 1*	95.5	99
Chicago	101	— 0.5	96.5	98.5
Eastern Pa.	99.5	— 0.5	86	97
Youngstown	106	+ 1	102	105
Wheeling	97	+ 2	100	92.5
Cleveland	100	— 3*	96.5	99.5
Buffalo	104	0	70	104
Birmingham	100	0	100	100
New England	89	+ 6	80	87
Cincinnati	102	+ 10	103	104
St. Louis	95	0	87	84.5
Detroit	106	— 1	103	104
Western	103	+ 1	90.5	...
Estimated national rate	99.5	+ 0.5*	93	100

Based on weekly steelmaking capacity of 1,999,035 net tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950; 1,843,516 tons for 1949.

*Change from revised rate for preceding week.

Composite Market Averages

	Jan. 18 1951	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av. = 100)	171.92	171.92	167.89	156.13	101.87
Index in cents per lb.	4.057	4.057	3.948	4.230	2.760
ARITHMETICAL PRICE COMPOSITES					
Finished Steel, NT	$105.55	$105.55	$103.50	$93.00	$58.27
No. 2 Fdry. Pig Iron, GT.	52.54	52.54	52.54	46.22	25.42
Basic Pig Iron, GT	52.16	52.16	52.16	45.72	24.75
Malleable Pig Iron, GT.	53.27	53.27	53.27	47.27	26.04
Steelmaking Scrap, GT	46.33	43.50	45.50	26.83	19.17

Weighted finished steel *index based on average* shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Jan. 18 1951	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.70	3.70	3.70	3.45	2.25
Bars, H.R., Chicago	3.70	3.70	3.70	3.45	2.25
Bars, H.R., del. Philadelphia	4.18	4.18	4.18	3.93	2.07
Bars, C.F., Pittsburgh	4.55	4.55	4.55	4.10-15	2.75
Shapes, Std., Pittsburgh	3.65	3.65	3.65	3.40	2.10
Shapes, Std., Chicago	3.65	3.65	3.65	3.40	2.10
Shapes, del. Philadelphia	3.90	3.90	3.90	3.46	2.215
Plates, Pittsburgh	3.70	3.70	3.70	3.50	2.25
Plates, Chicago	3.70	3.70	3.70	3.50	2.25
Plates, Coatesville, Pa.	4.15	4.15	4.15	3.60	2.25
Plates, Sparrows Point, Md.	3.70	3.70	3.70	3.50	2.25
Plates, Claymont, Del.	4.15	4.15	4.15	3.60	2.25
Sheets, H.R., Pittsburgh	3.60-75	3.60-75	3.60-75	3.35	2.20
Sheets, H.R., Chicago	3.60	3.60	3.60	3.35	2.20
Sheets, C.R., Pittsburgh	4.35	4.35	4.35	4.10	3.05
Sheets, C.R., Chicago	4.35	4.35	4.35	4.10	3.05
Sheets, C.R., Detroit	4.45	4.45	4.45	4.20	3.15
Sheets, Galv., Pittsburgh	4.80	4.80	4.80	4.40	3.70
Strip, H.R., Pittsburgh	3.75-4.00	3.75-4.00	3.75-4.00	3.25	2.10
Strip, H.R., Chicago	3.50	3.50	3.50	3.25	2.10
Strip, C.R., Pittsburgh	4.65-5.35	4.65-5.35	4.65-5.35	4.00	2.80
Strip, C.R., Chicago	4.90	4.90	4.50-90	4.30	2.90
Strip, C.R., Detroit	4.35-5.60	4.35-5.60	4.35-5.60	4.35-10	2.90
Wire, Basic, Pittsburgh	4.85-5.10	4.85-5.10	4.85-5.10	4.50	2.75
Nails, Wire, Pittsburgh	5.90-6.20	5.90-6.20	5.90-6.20	5.30	2.90
Tin plate, box, Pittsburgh	$8.70	$8.70	$7.50	$7.50	$5.00

SEMIFINISHED

Billets, forging, Pitts. (NT)	$66.00	$66.00	$66.00	$63.00	$42.00
Wire rods, ½-⅝", Pitts.	4.10-30	4.10-30	4.10-30	3.85	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$53.00	$47.00	$26.25
Basic, Valley	52.00	52.00	52.00	46.00	25.25
Basic, del. Phila.	56.39	56.39	56.39	49.44	27.09
No. 2 Fdry, Pitts.	52.50	52.50	52.50	46.50	25.75
No. 2 Fdry, Chicago	52.50	52.50	52.50	46.50	25.75
No. 2 Fdry, Valley	52.50	52.50	52.50	46.50	25.75
No. 2 Fdry, Del. Phila.	56.89	56.89	56.89	49.94	27.59
No. 2 Fdry, Birm.	48.88	48.88	48.88	39.38-42.38	22.13
No. 2 Fdry (Birm.) del. Cin.	55.58	55.58	55.58	46.08	25.81
Malleable Valley	52.50	52.50	52.50	46.50	25.75
Malleable, Chicago	52.50	52.50	52.50	46.50	25.75
Charcoal, Lyles, Tenn.	66.00	66.00	66.00	60.00	33.00
Ferromanganese, Etna, Pa.	188.00	188.00	188.00	175.00	140.00*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts.	$46.50	$46.50	$46.50	$30.00	$20.00
No. 1 Heavy Melt. E. Pa.	47.50	45.00	45.00	23.00	18.75
No. 1 Heavy Melt. Chicago	45.00	45.00	45.00	27.50	18.75
No. 1 Heavy Melt. Valley	46.25	46.25	46.25	30.25	20.00
No. 1 Heavy Melt. Cleve.	45.75	45.75	45.75	27.25	19.50
No. 1 Heavy Melt. Buffalo	44.88	44.88	44.88	27.75	19.25
Rails, Rerolling, Chicago	67.00	67.00	67.00	39.50	22.25
No. 1 Cast, Chicago	62.00	62.00	63.00	38.50	20.00

COKE, Net Ton

Beehive, Furn., Connlsvl.	$14.75	$14.75	$14.75	$13.25	$7.50
Beehive, Fdry., Connlsvl.	17.50	17.50	16.75	15.50	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.00

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	18.50	12.00
Zinc, E. St. Louis	17.50	17.50	17.50	9.75	8.25
Lead, St. Louis	16.80	16.80	16.80	11.80	6.35
Tin, New York	176.00	173.00	150.00	75.50	52.00
Aluminum, del.	19.00	19.00	19.00	17.00	15.00
Antimony, Laredo, Tex.	32.00	32.00	32.00	28.75	14.50
Nickel, refinery, duty paid	50.50	50.50	50.50	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$54.00	$54.50	$55.00	$56.50
Brooklyn,N.Y.,del.	....	58.29	59.29	....
Newark,del.	56.63	57.13	57.63	58.13
Philadelphia,del.	56.39	56.89	57.39	57.89
Birmingham District				
AlabamaCity,Ala. R2	48.38	48.88	....	....
Birmingham R2	48.38	48.88	....	....
Birmingham S9	48.38	48.88	....	....
Woodward,Ala. W15	48.38	48.88	....	....
Cincinnati,del.	....	55.58	....	....
Buffalo District				
Buffalo R2	52.00	52.50	53.00	....
Buffalo H1	52.00	52.50	53.00	....
Tonawanda,N.Y., W12	52.00	52.50	53.00	....
No.Tonawanda,N.Y., T9	....	52.50	53.00	....
Boston,del.	61.26	61.76	62.20	....
Rochester,N.Y., del.	54.63	55.13	55.63	....
Syracuse,N.Y.,del.	55.58	56.08	56.58	....
Chicago District				
Chicago I-3	52.00	52.50	52.50	53.00
Gary,Ind. U5	52.00	....	52.50	....
IndianaHarbor,Ind. I-2	52.00	....	52.50	....
So.Chicago,Ill. W14	52.00	52.50	52.50	....
So.Chicago,Ill., Y1	52.00	52.50	52.50	....
So.Chicago,Ill. U5	52.00	....	52.50	53.00
Milwaukee,del.	53.89	54.39	54.39	54.89
Muskegon,Mich.,del.	....	57.98	57.98	....
Cleveland District				
Cleveland A7	52.00	52.50	52.50	53.00
Cleveland R2	52.00	52.50	52.50	....
Akron, del. from Cleve.	54.39	54.89	54.89	54.39
Lorain,O. N3	52.00	....	....	53.00
Duluth I-3	....	....	52.50	....
Erie,Pa. I-3	52.00	52.50	52.50	53.00
Everett,Mass. E1	....	53.25	53.75	....
Fontana,Calif. K1	58.00	58.50	....	....
Geneva,Utah G1	52.00	52.50	....	....
Seattle,Tacoma,Wash.,del.	....	60.20	....	....
Portland,Oreg.,del.	....	60.20	....	....
LosAngeles,SanFrancisco,del.	59.70	60.20	....	....
GraniteCity,Ill. M10	53.90	54.40	54.90	....
St.Louis,del. (inc. tax)	54.65	55.15	55.65	....
Ironton,Utah C11	52.00	52.50	....	....
LoneStar,Tex. L6	48.00	*48.50	48.50	....
Minnequa,Colo. C10	54.00	55.00	55.00	....
Pittsburgh District				
NevilleIsland,Pa. P6	....	52.50	52.50	53.00
Pitts.,N&S. sides, Ambridge, Aliquippa,del.	....	53.69	53.69	54.19
McKeesRocks,del.	....	53.45	53.45	53.95
Lawrenceville,Homestead, McKeesport,Monaca,del.	....	53.94	53.94	54.44
Verona,del.	....	54.40	54.40	54.90
Brackenridge,del.	....	54.63	54.63	55.13
Bessemer,Pa. U5	52.00	....	52.50	53.00
Clairton,Rankin,So.Duquesne,Pa. U5	52.00	....	....	....
McKeesport,Pa. N3	52.00	....	....	53.00
Monessen,Pa. P7	54.00	....	....	....
Sharpsville,Pa. S6	....	....	52.50	53.00
Steelton,Pa. B2	54.00	54.50	55.00	55.50
Swedeland,Pa. A3	56.00	56.50	57.00	57.50
Toledo,O. I-3	52.00	52.50	52.50	53.00
Cincinnati,del.	57.01	57.51	....	....
Troy,N.Y. R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard,O. Y1	52.00	52.50	52.50	....
Youngstown Y1	52.00	52.50	52.50	....
Youngstown U5	52.00	....	....	53.00
Mansfield,O.,del.	56.26	56.76	56.76	57.26

* Low phos. southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	$62.50
Buffalo H1	63.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for each 0.045% max. P)	
NiagaraFalls,N.Y. P15	$83.00
Keokuk,Iowa, Openhearth & Fdry. frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb. piglets, 16% Si, frt. allowed K2	95.50
Wenatchee,Wash., O.H. & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$66.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$57.00
Steelton,Pa. B2	60.00
Philadelphia delivered	63.00
Troy,N.Y. R2	60.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL Jan. 18, 1951; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)

Fontana,Calif. K1 ....$79.00
Pittsburg,Pa. U5 .....52.00

INGOTS, Alloy (NT)

Detroit R7 .....$54.00
Fontana,Calif. K1 ....80.00
Houston,Tex. S5 .....62.00
Midland,Pa. C18 .....54.00
Munhall,Pa. U5 .....54.00
So.Duquesne,Pa. U5 ..54.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)

Bessemer,Pa. U5 ....$56.00
Clairton,Pa. U5 .....56.00
Ensley,Ala. T2 .....56.00
Fairfield,Ala. T2 .....56.00
Fontana,Calif. K1 ....75.00
Gary,Ind. U5 .....56.00
Johnstown,Pa. B2 ....56.00
Lackawanna,N.Y. B2 ..56.00
Munhall,Pa. U5 .....56.00
So.Chicago,Ill. U5 ....56.00
So.Duquesne,Pa. U5 ..56.00

Carbon, Forging (NT)

Bessemer,Pa. U5 ....$66.00
Buffalo R2 .....66.00
Canton,O. R2 .....66.00
Clairton,Pa. U5 .....66.00
Cleveland R2 .....66.00
Conshohocken,Pa. A3 ..73.00
Detroit R7 .....69.00
Ensley,Ala. T2 .....66.00
Fairfield,Ala. T2 .....66.00
Fontana,Calif. K1 ....85.00
Gary,Ind. U5 .....66.00
Geneva,Utah G1 .....66.00
Houston,Tex. S5 .....74.00
Johnstown,Pa. B2 ....66.00
Lackawanna,N.Y. B2 ..66.00
LosAngeles B3 .....85.00
Munhall,Pa. U5 .....66.00
Seattle B3 .....85.00
So.Chicago R2, U5 ....66.00
So.Chicago W14 .....66.00
So.Duquesne,Pa. U5 ..66.00
So.SanFrancisco B3 ..85.00

Alloy, Forging (NT)

Bethlehem,Pa. B2 ....$70.00
Buffalo R2 .....70.00
Canton,O. R2 .....70.00
Canton,O.(29) T7 ....66.00
Conshohocken,Pa. A3 ..77.00
Detroit R7 .....73.00
Fontana,Calif. K1 ....89.00
Gary,Ind. U5 .....70.00
Houston,Tex. S5 .....78.00
Ind.Harbor,Ind. Y1 ....66.00
Johnstown,Pa. B2 ....70.00
Lackawanna,N.Y. B2..70.00
LosAngeles B3 .....90.00
Massillon,O. R2 .....70.00
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....70.00
So.Chicago R2, U5 ....70.00
So.Chicago W14 .....70.00
So.Duquesne,Pa. U5 ...70.00
Warren,O. C17 .....70.00

ROUNDS, SEAMLESS TUBE (NT)

Canton,O. R2 .....$82.00
Cleveland R2 .....82.00
Fontana,Calif. K1 ....103.00
Gary,Ind. U5 .....82.00
Massillon,O. R2 .....82.00
So.Chicago,Ill. R2 ....82.00
So.Duquesne,Pa. U5 ...82.00

SHEET BARS (NT)

Fontana,Calif. K1 ...$89.00

SKELP

Aliquippa,Pa. J5 .....3.45
Munhall,Pa. U5 .....3.35
Warren,O. R2 .....3.35
Youngstown R2, U5 ...3.35

WIRE RODS

AlabamaCity,Ala. R2 ..4.10
Buffalo W12 .....4.10
Cleveland A7 .....4.10
Donora,Pa. A7 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 ....4.90
Houston,Tex. S5 .....4.50
Johnstown,Pa. B2 ....4.10
Joliet,Ill. A7 .....4.10
LosAngeles B3 .....4.90
Minnequa,Colo. C10 ....4.35
Monessen,Pa. P7 .....4.30
No.Tonawanda,N.Y.B11 4.10
Piffsburg,Calif. C11 ....4.75
Portsmouth,O. P12 ....4.30
Roebling,N.J. R5 .....4.20
So.Chicago,Ill. R2 ....4.10
SparrowsPoint,Md. B2..4.20
Sterling,Ill.(1) N15 ....4.10

Struthers,O. Y1 .....4.10
Torrance,Calif. C11 ....4.90
Worcester A7 .....4.40

STRUCTURALS
Carbon Steel Stand. Shapes

AlabamaCity,Ala. R2 ..3.60
Aliquippa,Pa. J5 .....3.65
Bessemer,Ala. T2 .....3.65
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fairfield,Ala. T2 .....3.65
Fontana,Calif. K1 .....4.25
Gary,Ind. U5 .....3.65
Geneva,Utah G1 .....3.65
Houston,Tex. S5 .....4.05
Ind.Harbor,Ind. I-2 ....3.65
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 ....4.25
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.25
Minnequa,Colo. C10 ....4.10
Munhall,Pa. U5 .....3.65
Niles,Calif.(22) P1 ....4.85
Phoenixville,Pa. P4 ....4.95
Portland,Oreg. O4 .....4.50
Seattle B3 .....4.30
So.Chicago,Ill. U5, W14 3.65
So.SanFrancisco B3 ...4.20
Torrance,Calif. C11 ....4.25
Weirton,W.Va. W6 ....3.90

Alloy Stand. Shapes

Clairton,Pa. U5 .....4.35
Fontana,Calif. K1 .....5.55
Munhall,Pa. U5 .....4.35
So.Chicago,Ill. U5 .....4.35

H.S., L.A. Stand. Shapes

Aliquippa,Pa. J5 .....5.50
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa.(14) B2 ..5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.10
Gary,Ind. U5 .....5.50
Geneva,Utah G1 .....5.50
Ind.Harbor,Ind. I-2 ....5.50
Ind.Harbor,Ind. Y1 ....5.50
Johnstown,Pa. B2 .....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 .....6.05
Munhall,Pa. U5 .....5.50
Seattle B3 .....6.10
So.Chicago,Ill. U5 .....5.50
So.SanFrancisco B3 ....6.00
Struthers,O. Y1 .....6.00

Wide Flange

Bethlehem,Pa. B2 .....3.70
Fontana,Calif. K1 .....4.65
Lackawanna,N.Y. B2 ....3.70
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 .....5.50
Lackawanna,N.Y. B2 ....5.50
Munhall,Pa. U5 .....5.45
So.Chicago,Ill. U5 .....5.45

SHEET STEEL PILING

Ind.Harbor,Ind. I-2 ....4.45
Lackawanna,N.Y. B2 ....4.45
Munhall,Pa. U5 .....4.45
So.Chicago,Ill. U5 .....4.45

BEARING PILES

Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

PLATES, High-Strength Low-Alloy

Aliquippa,Pa. J5 .....5.65
Bessemer,Ala. T2 .....5.65
Clairton,Pa. U5 .....5.65
Cleveland J5, R2 .....5.65
Conshohocken,Pa. A3 ...5.90
Ecorse,Mich. G5 .....5.85
Fairfield,Ala. T2 .....5.65
Fontana,Calif.(30) K1 ..6.25
Gary,Ind. U5 .....5.65
Geneva,Utah G1 .....5.65
Ind.Harbor,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 ....6.15
Johnstown,Pa. B2 .....5.65
Munhall,Pa. U5 .....5.65
Pittsburgh J5 .....5.65
Seattle B3 .....6.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 .....5.65
Youngstown Y1 .....6.15

PLATES, Open-Hearth Alloy

Claymont,Del. W16 .....4.85
Coatesville,Pa. L7 .....5.25
Conshohocken,Pa. A3 ...5.05
Fontana,Calif. K1 .....5.70
Gary,Ind. U5 .....4.75
Johnstown,Pa. B2 .....4.75
Munhall,Pa. U5 .....4.75
Sharon,Pa. S3 .....5.20
So.Chicago,Ill. U5 .....4.75
SparrowsPoint,Md. B2..4.75

FLOOR PLATES

Cleveland J5 .....4.75
Conshohocken,Pa. A3 ...4.75
Harrisburg,Pa. C5 .....5.95
Ind.Harbor,Ind. I-2 ....4.75
Munhall,Pa. U5 .....4.75
So.Chicago,Ill. U5 .....4.75

PLATES, Carbon A.R.

Fontana,Calif. K1 .....5.45
Geneva,Utah G1 .....4.85

PLATES, Carbon Steel

AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Ashland,Ky.(15) A10 ..3.70
Bessemer,Ala. T2 .....3.70
Clairton,Pa. U5 .....3.70
Claymont,Del. W16 .....4.15
Cleveland J5, R2 .....3.70
Coatesville,Pa. L7 .....4.15
Conshohocken,Pa. A3 ...4.15
Ecorse,Mich. G5 .....3.75
Fairfield,Ala. T2 .....3.70
Fontana,Calif.(30) K1 ..4.30
Gary,Ind. U5 .....3.70
GraniteCity,Ill. G4 .....4.40
Geneva,Utah G1 .....3.70
Harrisburg,Pa. C5 .....4.95
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1 3.70
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Minnequa,Colo. C10 .....4.50
Munhall,Pa. U5 .....3.70
Pittsburgh J5 .....3.70
Seattle B3 .....4.60
Sharon,Pa. S3 .....3.95
So.Chicago,Ill. U5, W14 3.70
SparrowsPoint,Md. B2..3.70
Steubenville,O. W10 .....3.70
Warren,O. R2 .....3.70
Weirton,W.Va. W6 .....4.00
Youngstown R2, U5, Y1 3.70

PLATES, Wrought Iron

Economy,Pa. B14 .....8.60

PLATES, Inspir Iron

Ashland,c.l.(15) A10 ..3.95
Ashland,l.c.(15) A10 ..4.45
Cleveland,c.l. R2 .....4.30
Warren,O. c.l. R2 .....4.30

BARS, Hot-Rolled Carbon

AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Alton,Ill.,I. II 3.95
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....3.70
Buffalo R2 .....3.70
Canton,O. R2 .....3.70
Clairton,Pa. U5 .....3.70
Cleveland R2 .....3.70
Detroit R7 .....3.85
Ecorse,Mich. G5 .....3.65
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1 3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.20
Minnequa,Colo. C10 .....4.15
Niles,Calif. P1 .....5.05
N.Tonawanda,N.Y. B11 3.70
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.45
So.Chicago R2, U5, W14 3.70
So.Duquesne,Pa. U5 ....3.70
So.SanFran.,Calf. B3 ...4.45
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Weirton,W.Va. W6 .....3.85
Youngstown R2, U5 .....3.70

BAR SIZE ANGLES; S. SHAPES

Aliquippa,Pa. J5 .....3.70
Atlanta A11 .....4.25
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ....3.70
Niles,Calif. P1 .....3.95
Portland,Oreg. O4 .....4.65
SanFrancisco S7 .....4.85

BAR SIZE ANGLES; H.R.CARBON

Bethlehem,Pa. B2 .....3.90

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 .....4.30
Buffalo R2 .....4.30
Canton,O. R2 .....4.30
Canton,O.(29) T7 .....3.95
Clairton,Pa. U5 .....4.30
Detroit R7 .....4.45
Ecorse,Mich. G5 .....4.25
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....4.30
Houston,Tex. S5 .....4.70
Ind.Harbor,Ind. I-2, Y1 4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.30
Midland,Pa. C18 .....4.30
So.Chicago R2, U5, W14 4.30
So.Duquesne,Pa. U5 ...4.30
Struthers,O. Y1 .....4.30
Warren,O. C17 .....4.30
Youngstown U5 .....4.30

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. U5 .....4.55
Gary,Ind. U5 .....4.55
Youngstown U5 .....4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy

Aliquippa,Pa. J5 .....5.55
Atlanta A11 .....5.35
Bessemer,Ala. T2 .....5.55
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.55
Cleveland R2 .....5.55
Ecorse,Mich. G5 .....5.65
Fairfield,Ala. T2 .....5.55
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.55
Ind.Harbor,Ind. I-2 .....5.55
IndianaHarbor,Ind. Y1..6.05
Johnstown,Pa. B2 .....5.55
Lackawanna,N.Y. B2 ....5.55
LosAngeles B3 .....6.25
Pittsburgh J5 .....5.55
Seattle B3 .....6.30
So.Duquesne,Pa. U5 ....5.55
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.05
Youngstown U5 .....5.55

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 .....4.55
BeaverFalls,Pa.M12,R2 .4.55
Buffalo B5 .....4.60
Camden,N.J. P13 .....5.00
Carnegie,Pa. C12 .....4.55
Chicago W18 .....4.55
Cleveland A7, C20 .....4.55
Detroit P17 .....4.70
Donora,Pa. A7 .....4.55
Ecorse,Mich. G5 .....4.35
Elyria,O. W8 .....4.55
FranklinPark,Ill. N5 ....4.55
Gary,Ind. R2 .....4.55
GreenBay,Wis. F7 .....4.55
Hammond,Ind. I-2, M13 .4.55
Hartford,Conn. R2 .....5.10
Harvey,Ill. B5 .....4.55
LosAngeles R2 .....6.00
Mansfield,Mass. B5 .....5.10
Massillon,O. R2, R8 ....4.55
Midland,Pa. C18 .....4.55
Monaca,Pa. S17 .....4.55
Newark,N.J. W18 .....5.00
Plymouth,Mich. P5 .....4.80
Pittsburgh J5 .....4.55
Putnam,Conn. W18 .....5.10
Readville,Mass. C14 .....5.10
St. Louis,Mo. M5 .....4.95
So.Chicago,Ill. W14 .....4.55
SpringCity,Pa.(5) K3 ....5.00
Struthers,O. Y1 .....4.55
Waukegan,Ill. A7 .....4.55
Youngstown E3, Y1 .....4.55

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 .....5.40
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa. B2 .....5.40
Buffalo B5 .....5.40
Camden,N.J. P13 .....5.80
Canton,O. R2 .....5.40
Canton,O.(29) T7 .....4.90
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7 .....5.45
Cleveland C20 .....5.40
Detroit P17 .....5.55
Donora,Pa. A7 .....5.45
Elyria,O. W8 .....5.40
Gary,Ind. R2 .....5.40
Hammond,Ind. I-2, M13 .5.40
Hartford,Conn. R2 .....5.85
Harvey,Ill. B5 .....5.40
Lackawanna,N.Y. B2 ....5.40
Mansfield,Mass. B5 .....5.85
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.75
Plymouth,Mich. P5 .....5.60
So.Chicago,Ill. R2, W14 .5.40
Struthers,O. Y1 .....5.40
Warren,O. C17 .....5.40
Waukegan,Ill. A7 .....5.45
Worcester,Mass. A7 .....5.75
Youngstown E3, Y1 .....5.40

RAIL STEEL BARS

ChicagoHts.(3,4) I-2, C2 4.75
Dallas,Tex.(4) S20 .....6.00
Franklin,Pa.(3,4) F5 .....4.75
Fairlf'wth,Ky.(26) I1 .....5.40
Huntngtn,W.Va.(3) W7 ..5.50
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....3.80
Tonawanda(3,4) B12 ....4.75
Williamsport(3) S19 ....5.00
Williamsport(4) S19 ....5.10

BARS, Wrought Iron

Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ...13.50
Dover(Wrgt.Iron) U1 ...12.25
Economy,Pa.(S.R.) B14 9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt)B14 12.20
McK.Rks.(Staybolt) L5 14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ....13.00

BARS, Reinforcing (Fabricators)

AlabamaCity,Ala. R2 ..3.70
Alton,Ill.(6) I1 .....3.70
Atlanta A11 .....4.25
Buffalo R2 .....3.70
Cleveland R2 .....3.70
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1 3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ....3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.20
Minnequa,Colo. C10 .....4.20
Niles,Calif. P1 .....5.05
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.45
So.Chicago,Ill. W14 .....3.70
So.SanFrancisco B3 ....4.45
SparrowsPoint,Md. B2 ..3.70
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Youngstown R2, U5 .....3.70

BARS, Reinforcing (Fabricated)

(Fabricated by Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ....4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.00
Seattle B3, N14 .....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ....4.75
Williamsport,Pa. S19 ...5.10

SHEETS, Hot-Rolled Steel
(18 gage and heavier)

AlabamaCity,Ala. R2 ..3.60
Ashland,Ky.(8) A10 ....3.60
Butler,Pa. A10 .....3.60
Cleveland J5, R2 .....3.60
Conshohocken,Pa. A3 ....4.00
Detroit M1 .....4.40
Ecorse,Mich.(8) G5 .....3.80
Fairfield,Ala. T2 .....3.60
Fontana,Calif. K1 .....4.55
Gary,Ind. U5 .....3.60
Geneva,Utah G1 .....3.70
GraniteCity,Ill. G4 .....4.30
Ind.Harbor,Ind. I-2, Y1 3.60
Irvin,Pa. U5 .....3.60
Lackawanna,N.Y. B2 ....3.60
Munhall,Pa. U5 .....3.60
Niles,O. N12 .....5.25
Pittsburg,Calif. C11 ....4.30
Pittsburgh J5 .....3.60
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 .....3.60
SparrowsPoint,Md. B2 ..3.60
Steubenville,O. W10 .....3.60
Torrance,Calif. C11 ....4.30
Warren,O. R2 .....3.60
Weirton,W.Va. W6 .....3.60
WestLeechburg,Pa. A4..3.75
Youngstown U5, Y1 ..3.60

SHEETS, H.R (19 gage)

AlabamaCity,Ala. R2 ..4.75
Dover,O. R1 .....5.65
Ind.Harbor,Ind. I-2 ....5.40
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 ....5.40

SHEETS, H.R (14-ga., heavier)
High-Strength Low-Alloy

Cleveland J5, R2 .....5.40
Conshohocken,Pa. A3 ....5.65
Ecorse,Mich. G5 .....5.50
Fairfield,Ala. T2 .....5.40
Fontana,Calif. K1 .....6.35
Gary,Ind. U5 .....5.40
Ind.Harbor,Ind. I-2 ....5.40
IndianaHarbor,Ind. Y1..5.90
Irvin,Pa. U5 .....5.40
Lackawanna(35) B2 ....5.40
Pittsburgh J5 .....5.40
Sharon,Pa. S3 .....5.40
So.Chicago,Ill. U5 .....5.40
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 .....5.40
Weirton,W.Va. W6 .....5.75
Youngstown U5 .....5.40
Youngstown Y1 .....5.90

SHEETS, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5, R2 .....6.55
Ecorse,Mich. G5 .....6.65
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.55
IndianaHarbor,Ind. Y1 ..7.05
IndianaHarbor,Ind. I-2 ..6.55
Irvin,Pa. U5 .....6.55
Lackawanna(37) B2 .....6.55
Pittsburgh J5 .....6.55
SparrowsPoint(38) B2 ..6.55
Warren,O. R2 .....6.55
Weirton,W.Va. W6 .....6.90
Youngstown Y1 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.35
Cleveland J5, R2	4.35
Ecorse,Mich. G5	4.55
Fairfield,Ala. T2	4.35
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	5.30
Gary,Ind. U5	4.35
GraniteCity,Ill. G4	5.05
Ind.Harbor,Ind. I-2, Y1	4.35
Irvin,Pa. U5	4.35
Lackawanna,N.Y. B2	4.35
Middletown,O. A10	4.35
Pittsburg,Calif. C11	5.80
Pittsburgh J5	4.35
SparrowsPoint,Md. B2	4.35
Steubenville,O. W10	4.35
Warren,O. R2	4.35
Weirton,W.Va. W6	4.35
Youngstown Y1	4.35

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala., R2	4.80
Ashland,Ky.(8) A10	4.80
Canton,O. R2	4.80
Dover,O. R1	5.50
Fairfield,Ala. T2	4.80
Gary,Ind. U5	4.80
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	4.80
Irvin,Pa. U5	4.80
Kokomo,Ind.(13) C16	5.20
MartinsFerry,O. W10	4.80
Niles,O. N12	6.00
Pittsburg,Calif. C11	5.55
SparrowsPoint,Md. B2	4.80
Steubenville,O. W10	4.80
Torrance,Calif. C11	5.55
Weirton,W.Va. W6	4.80

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.20
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	5.35
Irvin,Pa. U5	5.35
Kokomo,Ind.(13) C16	5.75
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.05
Middletown,O. A10	5.05

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.65
Niles,O. R2 (28)	5.65
Weirton,W.Va. W6	5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.70

SHEETS, Drum Body

Pittsburg,Calif. C11	4.30
Torrance,Calif. C11	4.30

SHEETS, Well Casing

Fontana,Calif. K1	5.10
Torrance,Calif. C11	5.10

BLUED Stock, 29 Ga.

Yorkville,O. W10	6.80
Follansbee,W.Va.(23) F4	6.85

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. U5	$17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.60
Gary,Ind. U5	7.50
Irvin,Pa. U5	7.50
SparrowsPoint,Md. B2	7.60
Yorkville,O. W10	7.50

SHEETS, Lt. Coated Ternes, 6lb

Yorkvill,O. W10	$8.40

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.50
Warren,O. R2	9.50
Yorkville,O. W10	9.60

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	5.20
Gary,Ind. U5	5.20
Mansfield,O. E6	6.05
Middletown,O. A10	5.20
Niles,O. N12	6.00
Weirton,W.Va. W6	5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.60

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.65
Cleveland R2	4.65
Ecorse,Mich. G5	4.70
Gary,Ind. U5	4.65
GraniteCity,Ill. G4	5.35
Ind.Harbor,Ind. I-2	4.65
Irvin,Pa. U5	4.65
Middletown,O. A10	4.65
Youngstown	4.65

SHEETS, Culvert No. 16	**Cu Alloy**	**Cu Fe**
Ashland A10	5.60	...
Canton,O. R2	5.65	6.10
Fairfield,Ala. T2	5.60	5.85
Gary U5	5.60	5.85
IndianaHarbor I-2	5.60	5.85
Irvin,Pa. U5	5.60	5.85
Kokomo C16	6.25	...
MartinsFy.O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.85
Fairfield,Ala. T2	5.60

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.85
Cleveland R2	4.20
Ind.Harbor,Ind. I-2	3.85
Warren,O. R2	4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.95
Middletown,O. A10	4.85
Warren,O. R2	4.95

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.05
Canton,O. R2	5.55

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.30
Middletown,O. A10	5.30

SHEETS, ALUMINIZED

Butler,Pa. A10	8.15

TIN PLATE, Electrolytic (Base Box)	**0.25 lb**	**0.50 lb**	**0.75 lb**
Aliquippa,Pa. J5	$7.15	$7.40	$7.80
Fairfield,Ala. T2	7.25	7.50	7.90
Gary,Ind. U5	7.15	7.40	7.80
GraniteCity,Ill. G4	7.35	7.60	8.00
Ind.Harbor,Ind. I-2, Y1	7.15	7.40	7.80
Irvin,Pa. U5	7.15	7.40	7.80
Niles,O. R2	7.15	7.40	7.80
Pittsburg,Calif. C11	7.90	8.15	8.40
SparrowsPoint,Md. B2	7.25	7.50	7.90
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	**Field**	**Arma-ture**	**Elec-tric**	**Motor**	**Dyna-mo**
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill.G4 (cut lengths)	...	...	7.95	9.20	...
Ind.Harbor,Ind. I-2	6.95	7.25	(34)	...	...
Mansfield,O. E6 (cut lengths)	7.10	7.25	7.75	9.00	9.80
Niles,O. N12 (cut lengths)	...	6.75	7.25	...	...
Vandergrift,Pa. U5	...	7.25	7.75	9.00	9.80
Warren,O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville,O. A10	...	7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower) Transformer Grade	**72**	**65**	**58**	**52**
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. U5	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	....	....	....
Zanesville,O. A10	10.85	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	**T-100**	**T-90**	**T-80**	**T-73**
Butler,Pa. A10 (C.R.)	....	....	14.75	15.25
Vandergrift,Pa. U5	12.90	13.75	14.75	15.25

TIN PLATE, American Coke (Base Box)	**1.25 lb**	**1.50 lb**
Aliquippa J5	$8.45	$8.70
Fairfield,Ala. T2	8.55	8.80
Gary U5	8.45	8.70
Ind.Har. I-2, Y1	8.45	8.70
Irvin,Pa. U5	8.45	8.70
Pitts.,Cal. C11	9.20	9.40
Sp.Pt.,Md. B2	8.55	8.80
Warren R2	8.45	8.70
Weirton W6	8.45	8.70
Yorkville,O. W10	8.45	8.70

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.35
Gary,Ind. U5	6.25
GraniteCity,Ill. G4	6.45
Ind.Harbor,Ind. I-2, Y1	6.25
Irvin,Pa. U5	6.25
Niles,O. R2	6.25
Pittsburg,Calif. C11	7.00
SparrowsPoint,Md. B2	6.35
Warren,O. R2	6.25
Weirton,W.Va. W6	6.25
Yorkville,O. W10	6.25

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	5.85
Gary,Ind. U5	5.30
GraniteCity,Ill. G4	6.05
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. U5	5.85
Yorkville,O. W10	6.15

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	5.30
Conshohocken,Pa. A3	5.55
Ecorse,Mich. G5	5.40
Fairfield,Ala. T2	5.30
Fontana,Cal. K1	6.20
Gary,Ind. U5	5.30
Ind.Harb.,Ind. I-2	5.30
IndianaHarbor,Ind. Y1	5.30
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	6.05
Seattle B3	6.30
Sharon,Pa. S3	5.40
So.SanFrancisco(25) B3	6.05
SparrowsPoint,Md. B2	4.95
Warren,O. R2	5.30
Weirton,W.Va. W6	5.75
Youngstown Y1	5.80
Youngstown U5	5.30

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	10.10
Carnegie,Pa. S18	10.60
Cleveland A7	10.00
Dover,O. G6	10.50
Fontana,Calif. K1	11.65
Harrison,N.J. C18	10.60
NewBritn.Conn.(10) S15	10.10
Pawtucket,R.I.(11) N8	10.75
Pawtucket,R.I.(12) N8	11.05
Sharon,Pa. S3	10.60
Worcester,Mass. A7	10.30
Youngstown C8	10.60

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.70
Dover,O. G6	7.30
Ecorse,Mich. G5	6.65
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.55
Weirton,W.Va. W6	7.20
Youngstown Y1	7.05

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.50
Alton,Ill.(1)- L1	3.75
Ashland,Ky(8) A10	3.50
Atlanta A11	4.05
Bessemer,Ala. T2	3.50
Bridgeprt,Conn.(10) S15	4.00
Buffalo(27) R2	3.50
Butler,Pa. A10	3.50
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	3.90
Detroit M1	4.40
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.50
Fontana,Calif. K1	4.75
Gary,Ind. U5	3.50
Houston,Tex. S5	4.90
Ind.Harbor,Ind. I-2, Y1	3.50
Johnstown,Pa.(25) B2	3.50
KansasCity,Mo.(9) S5	4.10
Lackawanna,N.Y.(32)B2	3.50
LosAngeles B3	4.25
Milton,Pa. B6	4.00
Minnequa,Colo. C10	4.55
NewBritain(10) S15	4.00
N.Tonawanda,N.Y. B11	3.50
Pittsburg,Calif. C11	4.25
Riverdale,Ill. A1	3.50
SanFrancisco S7	4.85
Seattle B3, N14	4.50
Sharon,Pa. S3	4.00
So.Chicago,Ill. W14	3.50
So. San Francisco B3	4.25
SparrowsPoint,Md. B2	3.50
Torrance,Calif. C11	4.25
Warren,O. R2	3.50
Weirton,W.Va. W6	3.60
WestLeechburg,Pa. A4	3.75
Youngstown U5, Y1	3.50

STRIP, Electro Galvanized

Cleveland A7	4.65
Dover,O. G6	5.50
Warren,O. T5	5.25
Weirton,W.Va. W6	4.65
Youngstown C8	5.25

STRIP, Cold-Finished, Spring Steel (Annealed)	**0.26-0.40C**	**0.41-0.60C**	**0.61-0.80C**	**0.81-1.05C**	**1.06-1.35C**
Berea,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
Bristol,Conn. W1	...	...	7.70	9.65	...
Carnegie,Pa. S18	...	6.80	7.40	9.35	11.65
Cleveland A7	4.65	6.45	7.40	9.35	11.65
Dearborn,Mich. D3	5.60	7.05	7.65	...	...
Detroit D2	5.60	6.65	7.25	...	...
Dover,O. G6	5.50	6.80	7.40	9.35	11.65
Franklin,Park,Ill. T6	5.90	6.60	7.55	9.50	11.80
Harrison,N.J. C18	...	...	7.70	9.65	11.95
Mattapan,Mass. T6	5.50	6.75	7.70	9.65	11.95
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	...
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn. D2	5.85	6.75	7.35	...	...
NewYork W3	...	7.10	7.70	9.65	11.95
Pawtucket,R.I. N8:					
Cleve-or-Pitts.Base	...	6.80	7.40	9.35	11.65
Worcester,Base	5.85	7.10	7.70	9.65	11.95
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J. R5	...	7.10	7.70	9.65	11.95
Wallingford,Conn. W2	5.85	6.75	7.35	9.30	11.60
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11.65
Worcester,Mass. A7	4.95	6.75	7.70	9.65	11.95
Worcester,Mass. T6	5.50	6.75	7.70	9.65	11.95
Youngstown C8	...	6.80	7.40	9.35	11.65
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	10.30	12.60	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
NewYork W3	...	...	10.20	12.50	15.35

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	5.35
Butler,Pa. A10	4.65
Cleveland A7, J5	4.65
Dearborn,Mich. D3	5.60
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	4.55
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	6.30
FranklinPark,Ill.(40) T6	4.90
Ind.Harbor,Ind. I-2	4.90
Lackawanna,N.Y. B2	4.65
LosAngeles C1	6.40
Mattapan,Mass. T6	5.50
Middletown,O. A10	4.65
NewBritain(10) S15	5.35
NewCastle,Pa. B4	5.35
NewCastle(40) E5	5.25
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.15
Pawtucket,R.I. R3	6.00
Pawtucket,R.I.(21) N8	5.85
Riverdale,Ill.(40) A1	4.90
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.35
SparrowsPoint,Md. B2	4.65
Trenton,N.J. R5	6.00
Wallingford,Conn. W2	5.85
Warren,O.(40) T5	5.25
Warren,O. R2	4.65
Weirton,W.Va. W6	4.65
WestLeechburg,Pa. A4	4.65
Youngstown C8, (40)	5.25
Youngstown Y1	4.65

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	6.70
Gary,Ind. U5	5.50
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10
NewBritn.Conn.(10) S15	5.45
Sharon,Pa. S3	5.85
Youngstown U5	5.50

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 AmericanSteel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Co.
B14 A. M. Byers Co.

C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-WarnerCorp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve.Cold.Roll.Mills Co.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire

G1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H4 Heppenstall Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.75
Warren,O. R2	4.10

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.25

TIGHT COOPERAGE HOOP

Atlanta A11	4.05
Riverdale,Ill. A1	3.90
Sharon,Pa. S3	4.15
Youngstown U5	3.75

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	5.95	6.40
Bartonville(19)K4	5.95	6.15
Buffalo W12	4.85	...
Cleveland A7	5.70	6.15
Crawfordsville M8	5.95	6.40
Donora A7	5.70	6.15
Duluth A7	5.70	6.15
Fairfield T2	5.70	6.15
Houston,Tex. S5	6.10	6.55
Johnstown B2	5.70	6.15
Joliet, Ill. A7	5.70	6.15
KansasCy,Mo. S5	6.30	6.75
Kokomo C16	5.80	6.05
LosAngeles B3	6.65	...
Minnequa C10	5.95	6.45
Monessen P7	5.95	6.40
Palmer W12	5.15	...
Pitts.Calif. C11	6.65	6.80
Prtsmth.(18)P12	6.10	6.60
Rankin A7	5.70	6.15
So.Chicago R2	5.70	5.95
So.S.Fran. C10	6.65	7.10
SparrowsPt. B2	5.80	6.25
Sterling,Ill.(1)N15	5.70	6.15
Struthers,O. Y1	5.70	6.15
Turrance,Cal. C11	6.65	...
Worcester A7	6.00	6.45

WIRE (16 gage)	An'ld Stone	Galv. Stone
Aliquippa J5	10.15	11.85
Bartonville(1) K4	10.25	11.95
Cleveland A7	10.25	12.15
Crawfrdsvle M8	10.30	12.00
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.25	12.15
Kokomo C16	10.25	11.95
Minnequa C10	10.40	12.40
Palmer,Mass.W12	10.26	12.15
Pitts.,Cal. C11	10.25	12.15
Prtsmth.(18) P12	10.55	12.30
SparrowsPt. B2	10.35	12.25
Waukegan A7	10.25	12.15

ROPE WIRE	(A)	(B)
Bartonville,Ill. K4	8.55	8.80
Buffalo W12	8.55	8.80
Cleveland A7	8.55	8.80
Donora,Pa. A7	8.55	8.80
Fostoria,O. S1	8.85	9.10
Johnstown,Pa. B2	8.55	8.80
Monessen,Pa. P16	8.55	8.80
Monessen,Pa. P7	8.80	9.05
NewHaven A7	8.85	9.10
Palmer,Mass. W12	8.85	9.10
Portsmouth,O. P12	8.55	8.80
Roebling,N.J. R5	8.85	9.10
SparrowsPt. B2	8.65	8.90
Struthers,O. Y1	8.55	8.80
Trenton,N.J. A7	8.85	9.10
Waukegan,Ill. A7	8.55	8.80
Worcester J4	8.35	8.60
Worcester T6	8.85	9.10

(A) Plow and Mild Plow.
(B) Improved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	4.85
Aliquippa,Pa. J5	4.85
Atlanta A11	5.10
Alton,Ill.(1) LI	*4.85*
Bartonville,Ill.(1) K4	4.85
Buffalo W12	4.85
Chicago W13	4.85
Cleveland A7, C20	4.85
Crawfordsville,Ind. MS	5.10
Donora,Pa. A7	4.85
Duluth A7	4.85
Fairfield,Ala. T2	4.85
Fostoria,O.(24) S1	5.35
Houston S5	5.25
Johnstown,Pa. B2	4.85
Joliet,Ill. A7	4.85
KansasCity,Mo. S5	5.45
Kokomo,Ind. C16	4.95
LosAngeles B3	5.80
Minnequa,Colo. C10	5.10
Monessen,Pa. P7	5.10
Newark, 6-Sga. I-1	5.50
No. Tonawanda B11	4.85
Palmer,Mass. W12	5.15
Pittsburg,Calif. C11	5.80
Portsmouth,O. P12	5.25
Rankin,Pa. A7	4.85
So.Chicago,Ill. R2	4.85
So.SanFrancisco C10	5.80
SparrowsPoint,Md. B2	4.95
Sterling,Ill.(1) N15	4.85
Struthers,O. Y1	4.85
Torrance,Calif. C11	5.80
Waukegan,Ill. A7	4.85
Worcester,Mass. A7, T6	5.15

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12	6.35
Cleveland A7	5.85
Crawfordsville,Ind. M8	6.20
Detroit D2	6.20
Dover,O. G6	6.20
Fostoria,O. S1	6.00
Kokomo,Ind. C16	5.70
FranklinPark,Ill. T6	6.20
Massillon,O. R8	5.85
Monessen,Pa. P16	5.85
Monessen,Pa. P7	6.10
NewHaven,Conn. D2	6.50
Pawtucket,R.I.(12) N8	6.85
Trenton,N.J. R5	6.15
Worcester A7	6.00
Worcester T6	6.50
Worcester W12	6.65

WIRE, Fine & Weaving (8" Coils)

Bartonville,Ill.(1) K4	8.80
Buffalo W12	8.80
Chicago W13	8.90
Cleveland A7	8.90
Crawfordsville,Ind. M8	8.95
Fostoria,O. S1	8.80
Johnstown,Pa. B2	8.90
Kokomo,Ind. C16	8.90
Monessen,Pa. P16	8.80
Palmer,Mass. W12	9.20
Portsmouth,O. P12	8.90
Roebling,N.J. R5	9.20
Waukegan,Ill. A7	8.90
Worcester,Mass. A7, T6	9.20

WIRE, Galv'd ACSR for Cores

Bartonville,Ill K4	8.50
Monessen,Pa. P16	8.50
Roebling,N.J. R5	8.80
SparrowsPoint,Md. B2	8.25

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.90
Monessen,Pa. P16	11.40
Roebling,N.J. R5	11.55

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	6.25
Alton,Ill.(1) LI	*6.25*
Bartonville,Ill.(1) K4	6.25
Buffalo W12	6.25
Cleveland A7	6.25
Donora,Pa. A7	6.25
Duluth A7	6.25
Fostoria,O. S1	6.25
Johnstown,Pa. B2	6.25
LosAngeles B3	7.20
Milbury,Mass.(12) N6	8.05
Monessen,Pa. P7, P16	6.25
Palmer,Mass. W12	6.55
Pittsburg,Calif. C11	7.20
Roebling, N.J. R5	6.55
Portsmouth,O. P12	6.25
Rankin,Pa. A7	6.55
So.Chicago,Ill. R2	6.25
So.SanFrancisco C10	6.85
SparrowsPoint,Md. B2	6.35
Struthers,O. Y1	6.25
Trenton,N.J. A7	6.55
Waukegan,Ill. A7	6.25
Worcester A7,J4,T6,W12	6.55

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.80
Alton,Ill.(1) LI	*5.90*
Buffalo W12	5.60
Cleveland A7	5.90
Donora,Pa. A7	5.80
Duluth A7	5.80
Johnstown,Pa. B2	5.80
LosAngeles B3	6.85
Monessen,Pa. P7, P16	5.90
NewHaven,Conn. A7	6.20
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.80
SparrowsPoint,Md. B2	6.00
Torrance,Calif. C11	6.85
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Worcester,Mass. A7	6.20

WOVEN FENCE, 9-15½ Ga. Col

AlabamaCity,Ala. R2	126
Ala.City,Ala. 17-15ga.R2	213
Aliquippa,Pa.9-14½ga.J5	130
Atlanta A11	133
Bartonville,Ill.(19) K4	130
Crawfordsville,Ind. M8	132
Donora,Pa. A7	130
Duluth A7	130
Houston,Tex. S5	138
Fairfield,Ala. T2	130
Johnstown,Pa. B2	130
Johnstown,17ga.,6" B2	204
Johnstown,17ga.,4" B2	207
Joliet,Ill. A7	130
KansasCity,Mo. S5	142
Kokomo,Ind. C16	132
Minnequa,Colo. C10	138
Monessen,Pa. P7	135
Pittsburg,Calif. C11	153
Portsmouth,O.(18) P12	137
Rankin,Pa. A7	130
So.Chicago,Ill. R2	126
Sterling,Ill.(1) N15	130

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	140
Duluth A7	125
Franklin,Pa. F5	140
Huntington,W.Va. W7	130
Johnstown,Pa. B2	140
Marion,O. P11	140
Minnequa,Colo. C10	130
Moline,Ill. R2	136
So.Chicago R2	140
Tonawanda B12	140
Williamsport,Pa. S19	150

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	136
Aliquippa,Pa. J5	140
Atlanta A11	143
Bartonville,Ill.(19) K4	143
Crawfordsville MS	145
Donora,Pa. A7	140
Duluth, Minn. A7	140
Fairfield,Ala. T2	140
Houston,Tex. S5	148
Johnstown,Pa. B2	140
Joliet,Ill. A7	140
KansasCity,Mo. S5	152
Kokomo,Ind C16	142
Minnequa,Colo. C10	146
Monessen,Pa. P7	145
Pittsburg,Calif. C11	160
Portsmouth,O.(18) P12	147
Rankin,Pa. A7	140
So.Chicago,Ill. R2	136
So.SanFran.,Calif. C16	160
SparrowsPoint,Md. B2	142
Sterling,Ill.(1) N15	140

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	123
Atlanta A11	126
Bartonville,Ill.(19) K4	123
Chicago W13	123
Crawfordsville MS	132
Donora,Pa. A7	123
Duluth A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	147
SparrowsPoint,Md. B2	125
Sterling,Ill.(1) N15	123

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	6.10
Bartonville,Ill.(19) K4	5.95
Crawfordsville,Ind. MS	6.30
Donora,Pa. A7	5.95
Duluth A7	5.95
Johnstown,Pa. B2	5.95
Joliet,Ill. A7	5.95
Kokomo,Ind. C16	6.05
Minnequa,Colo. C10	6.20
Pittsburg,Calif. C11	6.90
Portsmouth,O. P12	6.25
Rankin,Pa. A7	5.95
So.Chicago,Ill. R2	6.10
SparrowsPoint,Md. B2	6.05
Sterling,Ill.(1) N15	5.65
Worcester,Mass. A7	6.25

NAILS, Cut (100 lb keg)
To dealers (33)

Conshohocken,Pa. A3	$7.35
Wheeling,W.Va. W10	7.15

NAILS & STAPLES, Stock to dealers & mfrs. (7)

	Col.
AlabamaCity,Ala. R2	118
Aliquippa,Pa.(13) J5	118
Atlanta A11	121
Bartonville,Ill.(19) K4	118
Chicago,Ill. W13	130
Cleveland A9	125
Crawfordsville,Ind. MS	122
Donora,Pa. A7	118
Duluth A7	118
Fairfield,Ala. T2	118
Galveston,Tex. D7	126
Houston,Tex. S5	126
Johnstown,Pa. B2	118
Joliet,Ill. A7	118
KansasCity,Mo. S5	130
Kokomo,Ind. C16	120
Minnequa,Colo. C10	123
Monessen,Pa. P7	124
Pittsburg,Calif. C11	137
Portsmouth,O. P12	124
Rankin,Pa. A7	118
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	120
Sterling,Ill.(1) N15	118
Torrance,Calif. C11	138
Worcester,Mass. A7	124

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.15
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.15
Minnequa,Colo. C10	6.15
Pittsburgh J5	6.15
Seattle B3	6.65
So.Chicago,Ill. R2	6.15
Struthers,O. Y1	6.15
Youngstown R2	6.15

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa.(32) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85
Seattle B3	10.40

TIE PLATES

Fairfield,Ala. T2	4.50
Gary,Ind. U5	4.50
Ind.Harbor,Ind. I-2	4.50
Lackawanna,N.Y. B2	4.50
Minnequa,Colo. C10	4.50
Pittsburg,Calif. C11	4.65
Seattle B3	4.65
Steelton,Pa. B2	4.50
Torrance,Calif. C11	4.65

JOINT BARS

Bessemer,Pa. U5	4.70
Fairfield,Ala. T2	4.70
Ind.Harbor,Ind. I-2	4.70
Joliet,Ill. U5	4.70
Lackawanna,N.Y. B2	4.70
Minnequa,Colo. C10	4.70
Steelton,Pa. B2	4.70

AXLES

Ind.Harbor,Ind. S13	5.60
Johnstown,Pa. B2	5.60

RAILS	Std. No. 1	Std. No. 2	Std. Alt No. 2	TeeRails 60 lb Under
Bessemer,Pa. U5	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. U5	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
Ind.Harbor,Ind. I-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts.Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island SteelCorp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield,S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.

U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.

V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Corp.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg.Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.

Y1 Youngston Sheet&Tube

TOOL STEELS

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	23.00	13.5W,4Cr,3V	140.00
Extra Carbon	27.00	18W,4Cr,2V,9Co	217.50
Spec. Carbon	32.50	18W,4Cr,2V,7Co	217.50
Oil Hardening	35.00	18.25W,4.25Cr,1V,4.75Co	185.50
Cr Hot Wrk	35.00	20.25W,4.25Cr,1.6V,12.25Co	323.00
Hi-Carbon-Cr	63.50	1.5W,4Cr,1V,8.5Mo	78.50
18W,4Cr,1V	123.50	6.4W,4.5Cr,1.6V,5Mo	87.00
18W,4Cr,2V	138.00	6W,4Cr,3V,6Mo	109.50

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, U4, V2, V3.

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 5 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga & heavier.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.2 for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(23) 28 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (elec. furn. billet, 5.40c); to consumers, 6.15c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. edge or square edge.
(33) To jobbers, deduct 20 cents.
(34) 7.25c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.00	0.24	34.0	32.0	29.5	1.5	6.5	3.5
¼	6.00	0.42	28.5	26.5	23.5	1.0	3.0	6.0
⅜	6.00	0.57	23.5	21.5	18.5	7.0	9.0	12.0
½	8.50	0.84	36.0	34.0	31.0	14.0	12.0	13.0
¾	11.5	1.13	39.0	37.0	34.0	18.0	16.0	17.0
1	17.0	1.68	41.5	39.5	36.5	21.5	18.5	20.5
1¼	24.0	2.28	42.0	41.0	37.0	22.0	24.0	21.0
1½	27.5	2.78	42.0	41.5	41.5	23.0	21.5	22.0
2	37	3.68	43.0	41.0	42.0	23.5	21.5	22.5
2½	58.5	5.82	43.5	41.5	42.5	24.0	22.0	23.0
3	76.5	7.62	43.5	41.5	42.5	24.0	22.0	23.0

Column A: Etna, Pa. N2; Butler, Pa. ⅛-3", F6; Benwood, W. Va., 3" points lower on ⅛", 1½ points lower on ¼" and 2 points lower on ⅜". W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜", following make ½" and larger; Lorain, O., N3; Youngstown R2 and 36.5% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5; Fontana, Calif. K1 quotes 41% points lower on ⅛" and larger; Continuous weld and 21% on 3½" and 4". Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind. ⅛" through 3", Y1; Alton, Ill. (Gary base) I1.

Column D: Butler, Pa. F6, ⅛-3", Benwood, W. Va. W10, except plus 3% on ⅛" plus 2½% on ¼" plus 4½% on ⅜", Sharon, Pa. M6, plus 0.5 on ⅛", 1 point lower on ¼", ⅜", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3". Following grade only on ⅛" and larger: Lorain, O. N3; Youngstown R2, and 16.5% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5 quotes 1 point lower on ⅛", 2 points lower on 1", 1½ points lower on 1¼", 2" 2½" and 3", 1½ points and 2" 1½ points lower on 2½" and 3"; Etna, Pa. N2 and 18% on 3½" and 4".

Columns C & D: Youngstown R2.

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec Weld Black C	Elec Weld Galv. D
2	37.00	3.68	29.5	9.5	29.5	9.5
2½	58.5	5.82	32.5	12.5	32.5	12.5
3	76.5	7.62	32.5	12.5	32.5	12.5
3½	92.0	9.20	34.5	14.5	34.5	14.5
4	81.00	10.89	34.5	14.5	34.5	14.5
5	1.48	14.81	37.0	17.0	37.0	17.0
6	1.92	19.18	37.0	17.0	37.0	17.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6 in.; Lorain, N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mil, minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	13.45	16.47	15.36	15.36
1¼	13	16.09	19.71	15.61	18.19
1½	13	17.27	21.15	17.25	20.30
1¾	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2¼	13	23.35	29.82	24.50	28.84
2½	12	26.92	32.97	26.98	31.76
2¾	12	29.65	36.32	29.57	34.76
3	12	32.11	39.33	31.33	36.84
3½	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding	Plates 10%	Plates 20%	Strip Cold-Rolled Carbon Base Both Sides 10%	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Cu Base Both Sides
Stainless						
302				19.75	27.50	77.00
304	25.00	28.00		20.75	27.50	77.00
		29.50		24.50		
309	26.50	35.00				
310	36.50	41.00				144.00
316	29.50	31.50		26.00	36.50	
		34.00				
317	34.50	39.00				
318	33.50	38.00				
321	26.50	31.00		23.00	33.00	111.00
347	27.50	30.50		24.00	33.50	130.00
		32.00				
405	21.25	27.75				
410	20.75	27.25				
Nickel	33.25	44.25	43.00	54.00		
Inconel	41.00	53.50				165.00
Monel	34.75	45.75				
Copper*			23.70	29.65†		

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa., A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa., J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

½-in. and shorter:
- ⅜-in. and smaller diam. 15
- 7/16-in. & ½-in. 18.5
- ⅝-in. and larger 17.5

Longer than 6 in.:
- All diams. 14

Lag bolts, all diams.:
- 6 in. and shorter 23
- over 6 in. long 21

Ribbed Necked Carriage 26
Blank 34
Plow 34
Step, Elevator, Tap, and Sleigh Shoe 21
Tire bolts 12
Boiler & Fitting-Up bolts 31

NUTS

H.P. & C.P. Square:	Reg.	Heavy
⅜-in. & smaller	15	15
7/16-in. & ½-in.	12	6.5
9/16-in. 1-in.	9	1
1⅛ in. & larger	7.5	1
H.R. Hex.:		
⅜-in. & smaller	26	22
7/16-in. & ½-in.	16.5	6.5
9/16-in. 1-in.	12	2
1⅛-in. & larger	8.5	2
C.P. Hex.:		
⅜-in. & smaller	26	22
7/16-in. & ½-in.	23	17.5
9/16-in. & 1-in.	19.5	12
1⅛-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg. Hvy.
½-in. & smaller	35 28.5
9/16-in. & ⅝-in.	29.5 22
11/16-in. 1½-in.	24 15
1⅝-in. & larger	13 8.5
	Light
½-in. & smaller	35
9/16-in. to ⅝-in.	28.5
11/16-in. to 1½-in.	26

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish .....56 & 10
Plated finishes ...41 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ⅝-in. & smaller 47
- ¾-in. through 1 in. ... 40

Longer than 6 in.:
- ⅝-in. & smaller 33
- ¾-in. through 1 in. ... 18

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 44
1 in. and smaller diam. x over 6 in. 33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 41
¼-in. diam. & larger .. 24
N.F. thread, all diams.. 18

RIVETS

F.o.b. midwestern plants
Structural ⅝-in., larger 7.85c
⅝-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers .....List to 50c off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Diam. Inches	Length	Cents per lb
17,18,20	60,72	17.00
8 to 16	48,60,72	17.00
7	48,60	18.64
6	48,60	19.95
4.5¼	40	20.48
3	40	21.53
2½	24,30	22.05
2	24,30	24.15

CARBON

40	100,110	7.65
35	100,110	7.65
30	84,110	7.65
24	72 to 104	7.65
17 to 20	34,90	7.65
14	60,72	8.16
10,12	60	8.42

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	41.00	34.00	31.25
302	41.00	36.50	31.25
303	43.00,	40.00	33.75
304	43.00	38.50	32.75
309	55.50	54.50	44.25
316	56.50	58.50	48.75
321	49.00	48.00	36.75
347	53.50	52.00	41.25
410	36.50	30.50	25.75
416	37.00	37.00	26.25
420	44.00	47.00	31.25
430	39.00	31.00	26.25
501	27.50	26.00	14.25
502	28.50	27.00	15.25

Brackenridge, Pa., sheets A4.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502, S18.

Cleveland, strip A7.

Detroit, strip, except Types 309, 321, 416, 420, 501 and 502 M1.

Dunkirk, N.Y., bars, wire A4.

Duquesne, Pa., bars U5.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip C18.

McKeesport, Pa., bars, sheets except Type 416 U5.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Pittsburgh, sheets C18.

Sharon, Pa., strip, except Types 303, 309, 316, 416, 501 and 502 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.

Washington, Pa., bars, sheets & strip, except Type 309 sheets 56.00c and bars 44.75c, J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 310 sheets 61.50c, strip 63.00c, W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4.

Youngstown, strip, except Types 303, 309, 316, 416, 501 and 502 C8.

COAL CHEMICALS

Spot, cents per gallon, ovens
- Pure benzol 30.00-35.00
- Toluol, one deg. ..26.00-33.00
- Industrial xylol ..25.00-33.50
- Per ton bulk, ovens

Sulphate of ammonia $32-$45
Cents per pound, ovens

Phenol, 40 (carlots, non-returnable drums) ..17.25
- Do., less than carlots..18.00
- Do., tank cars 15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $41; less than 60%, $38.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

METAL POWDERS

(Per pound, f.o.b. point in ton lots f. 100 mesh, except as otherwise noted.)

Sponge iron ..... Cents
- 98+% Fe, carlots 16.00
- Swedish, c.i.f. N. York, in bags 18.50

Electrolytic Iron:
- Annealed, 99.5% Fe 42.00
- Unannealed, 99 Fe 36.00
- Unannealed, 99 Fe minus 325 mesh 38.00

Powder Flakes 18.50

Carbonyl Iron:
- 97.9-99.8%, size 5 to 10 microns, $3 ..... 14.00

Aluminum:
- Carlots, freight allowed 29.50
- Atomized, 500 lb drums, freight allowed 33.50

Brass, 10-ton lots 30.00-33.25

Copper:
- Electrolytic 37.50
- Reduced 33.75-37.00

Lead 25.00

Manganese:
- Minus 100-mesh 57.00
- Minus 35 mesh 52.00
- Minus 200 mesh 62.00

Nickel unannealed 83.00

Nickel-Silver, 10-ton lots 44.00

Silicon 58.50

Solder (plus cost of metal) 8

Stainless Steel, 302 ..... $1.

Tin ..... $1.

Zinc, 10-ton lots 23.00-

Tungsten:
- 99+%, minus 80 to 200 mesh, freight allowed, over 1000 lb ..... 2.
- 1000 lb ..... 2.
- Less than 1000 lb ..... 3.
- 98.8% minus 65 mesh, freight allowed: 1000 lb. and over ..... 1.
- less than 1000 lb. ..... 1.

Molybdenum:
- 99%, minus 80 to 200 mesh, over 500 lb ..... 2.
- 200 to 500 lb ..... 3.
- less than 200 lb ..... 3.

Chromium, electrolytic 99% Cr min. ..... 3.

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll.fur. $14.50-15.
Connellsvll.fdry. 17.00-18.
New River, foundry ..19.
Wise county, foundry. 15.
Wise county, furnace. 13.

OVEN FOUNDRY COKE

Kearney, N. J., ovens $22.
Everett, Mass., ovens
- New England, del. ..24.
- Chicago, ovens ..... 21.
- Chicago, del. ..... 22.
- Detroit, del. ..... 24.

Terre Haute, ovens. ..22.
Milwaukee, ovens ..... 23.
Indianapolis, ovens ..... 22.
- Chicago, del. ..... 26.
- Cincinnati, del. ..... 25.
- Detroit, del. ..... 26.

Ironton, O., ovens ..... 21.
- Cincinnati, del. ..... 24.

Painesville, O., ovens. 24.
- Buffao, del. ..... 26.
- Cleveland, del. ..... 25.

Erie, Pa., ovens ..... 23.
Birmingham, ovens ..... 20.
- Birmingham, del. ..... 21.

Philadelphia, ovens ..... 22.
Neville Island, Pa., ovens 23.
Swedeland, Pa., ovens ..... 22.
St. Louis, ovens ..... 24.
- St. Louis, del. ..... 25.

Portsmouth, O., ovens 21.
- Cincinnati, del. ..... 24.

Detroit, ovens ..... 24.
- Detroit, del. ..... 25.
- Buffalo, del. ..... 27.
- Flint, del. ..... 26.
- Pontiac, del. ..... 25.
- Saginaw, del. ..... 26.

Includes representative switching charge of *, $1.60; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140‡		Carbon	Floor
New York (city)	6.27	7.29	8.44	6.59	...	6.42	7.20	9.25	6.40	6.58	8.04
New York (c'try)	5.97	6.99	8.14	6.29	...	6.12	6.99	8.95	6.10	6.28	7.74
Boston (city)	6.40	7.20	8.49	6.35	...	6.25	7.01	9.25	6.10	6.58	7.88
Boston (c'try)	6.20	7.00	8.29	6.15	...	6.05	6.81	9.05	6.20	6.78	7.68
Phila. (city)	7.15	7.05	8.25	6.35	...	6.30	7.11	8.90	6.15	6.30	7.40
Phila. (c'try)	6.90	6.80	8.00	6.10	...	6.05	6.86	8.65	5.90	6.05	7.15
Balt. (city)	5.80	7.04	8.27	6.24	...	6.24	7.09	...	6.34	6.00	7.64
Balt. (c'try)	5.60	6.84	8.07	6.04	...	6.04	6.89	...	6.14	5.80	7.44
Norfolk, Va.	6.50	...	...	6.70	...	6.55	7.70	...	6.60	6.50	8.00
Richmond, Va.	5.90	...	8.10	6.10	...	6.10	6.90	...	6.30	6.05	7.80
Wash. (w'hse)	6.02	7.26	8.49	6.46	...	6.46	7.26	...	6.56	6.22	7.86
Buffalo (del.)	5.80	6.60	8.29	6.06	...	5.80	6.65	10.65‖	6.00	6.25	7.55
Buffalo (w'hse)	5.60	6.40	8.09	5.86	...	5.60	6.45	10.45‖	5.80	6.05	7.35
Pitts. (w'hse)	5.60	6.40*	7.75	5.65-5.95	6.90	5.55	6.40	10.10‖	5.70	5.75	7.00
Detroit (w'hse)	5.45-5.78	6.53-6.80	7.99	5.94-5.95	7.75	5.84	6.56	8.91	6.00	6.15-6.35	7.28
Cleveland (del.)	5.80	6.60	8.30	5.89	7.10	5.77	6.60-6.70	8.91	10.02	6.12	7.32
Cleve. (w'hse)	5.60	6.40	8.10	5.69	6.90	5.57	6.40-6.50	8.71	5.82	5.92	7.12
Cincin. (city)	6.02	6.59	7.34	5.95	...	5.95	6.51	...	6.24	6.34	7.50
Chicago (city)	5.80	6.60	7.95	5.75	...	5.75	6.50	10.30	5.90	6.00	7.20
Chicago (w'hse)	5.60	6.40	7.75	5.55	...	5.55	6.30	10.10	5.70	5.80	7.00
Milwaukee (city)	5.94	6.74	8.09	5.86	...	5.89	6.74	10.41	6.04	6.14	7.34
Milwau. (c'try)	5.74	6.54	7.89	5.69	...	5.69	6.54	10.21	5.84	5.94	7.14
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08‖	5.78	5.93	7.13
St. L. (w'hse)	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88‖	5.58	5.73	6.93
Kans. City (city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
Kansas City (w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Omaha, Nebr.	6.13‖	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birmingham (city)	5.75	6.55	6.90‖	5.70	...	5.70	7.53	...	5.85	6.10	8.25
Birmingham (w'hse)	5.60	6.40	6.75‖	5.55	...	5.55	7.33	...	5.70	5.95	8.23
Los Ang. (city)	6.55	8.10	9.05‖	6.60	8.90	6.55	7.75	...	6.55	6.60	9.20
L. A. (w'hse)	6.35	7.90	8.85‖	6.40	8.70	6.35	7.55	...	6.35	6.40	8.70
San Francisco	6.65	7.80‖	8.90‖	6.60	...	6.45	8.20	...	6.45	6.50	8.60
Seattle-Tacoma	7.05	8.60‖	9.20‖	7.30	...	6.75	9.10	11.15	6.65	6.75	8.80

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; ‖ as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; 2—500 to 1499 lb; 3—450 to 1499 lb; 4—3500 lb and over; 5—1000 to 1999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Hayward, Ashland, Ky., Clearfield, Curwensville, Pa., Ottawa, Ill., $116.60. Hard-fired, St. Louis, Vandalia, Mo., Olive Hill, Ky., $156.20.

High-Heat Duty: Salina, Pa. $99.60 Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, Curwensville, Lumber, Lockhaven, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Ky., Troup, Athens, Tex., Stevens Pottery, Ga., Bessemer, Ala., Portsmouth, Oak Hill, O., Ottawa, Ill., $94.60.

Intermediate-Heat Duty: St. Louis, Farber, Vandalia, Mo., West Decatur, Orviston, Beach Creek, Curwensville, Lumber, Lockhaven, St. Marys, Clearfield, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Hayward, Ky., Athens, Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $88; Bessemer, Ala., $79.20.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., $79.20; Parral, O., $78.50; St. Marys, Pa., $76; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Chester, New Cumberland, W. Va., Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., $66.

Wire Cut: Chester, Wellsville, O., $64.

MALLEABLE BUNG BRICK

St. Louis, Vandalia, Farber, Mo.; Olive Hill, Ky., $105.60; Beach Creek, Pa., $94.60; Ottawa, Ill., $90.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $94.60; Hays, Pa., $100.10; Joliet, Rockdale, Ill., E. Chicago, Ind., $104.50; Lehi, Utah, Los Angeles, $111.10.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $92.40.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $93.50.

BASIC BRICK

Per net ton, Baltimore or Chester, Pa. Burned chrome brick, $73-$78; chemical-bonded chrome brick, $77-$82; magnesite brick, $99-$104; chemical-bonded magnesite, $88-$93.

MAGNESITE

Per net ton, Chewelah, Wash. Domestic dead-burned, 3/8" grains; bulk, $36.30; single paper bags, $41.80.

DOLOMITE

Per net ton. Domestic, burned bulk; Bonne Terre, Mo., $12.15; Martin, Millersville, Narlo, Clay Center, Woodville, Gibsonburg, Bettsville, O., Billmeyer, Plymouth Meeting, Blue Bell, Williams, Pa., Millville, W. Va., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports.

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950 in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62½% concentrates contract	17.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports.

Swedish basic, 60 to 68½%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$28-$30
Domestic scheelite, del.	nominal

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00
South African Transvaal	
44% no ratio	$19.50
45% no ratio	20.00
48% no ratio	27.00
50% no ratio	28.00-28.50
Brazilian	
44% 2.5:1 lump	$32.00
Rhodesian	
45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00
Domestic—rail nearest seller	
48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1.5% Si). Carlot per gross ton, $70, Palmerton, Pa.; $71, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $185 per gross ton of alloy, c.l. packed $197, gross ton lots, packed, $212; less gross ton lots, packed, $220; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Welland, Ont., or Ashtabula, O. Base price: $187, Johnstown, Pa.; $185, Sheridan, Pa.; $188, Etna, Pa.; $190, Chattanooga, Tenn. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $227, less gross ton lots, $244 f.o.b. Chicago. Add or subtract $2.30 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low Carbon Ferromanganese, Regular Grade: (Mn 85-90%, C max. 0.07%). Carload, lump, bulk, max. 0.07% C, 25.75c per lb of contained Mn, carload packed 26.5c, ton lot 27.6c, less ton 28.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices. Ic for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 7.5% C max. 7% Si. **Special Grade:** (Mn 90% min., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max.). Carload, lump, bulk 19.15c per lb of contained Mn, carload packed 19.9c, ton lot 21.0c, less ton 22.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.). Carload lump bulk 31c per lb of metal; packed, 34.75c; ton lot 36.25c; less ton lot 38.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic; 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%, C. Contract, lump bulk, 1.50% C grade, 18-20% Si 9.90c per lb of alloy, carload packed, 10.65c, ton lot 11.55c, less ton 12.55c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2 from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, cl., lump, bulk 21.75c per lb of contained Cr, c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, add 0.25c.

"SM" Ferrochrome: (Cr 60-65%, Si 1-6%, Mn

(Please turn to page 126)

Price Control Action Pending

Government steps up its efforts to formulate program as dislocations to nation's economy spread. Voluntary action has stabilized primary nonferrous metal markets

New York—Dislocations in the nation's economy caused by progressive transition from a peacetime status to mobilization have speeded up the government's efforts to formulate a program for controlling prices. Effective date for a general freeze on prices is expected to be sooner than had been projected only a short time ago. It is being delayed by difficulties in working out details with various branches of the government and in creating the necessary working staffs.

Freezing of prices will have little effect on primary copper, lead and zinc markets since producers of those metals have held prices unchanged for many weeks. The problem of stabilizing the tin market is an international one. United States, French and British government may set up machinery for the allocation of tin, as well as other scarce strategic materials. Straits rose to an all-time high of $1.76 a pound on Jan. 17. Tin prices held at firm levels despite reports of proposed allocations. NPA will issue orders soon sharply restricting use of tin in civilian goods.

Copper and brass ingot manufacturers have agreed to a voluntary price stabilization agreement on a company-by-company basis under which they will give ESA advance notice of any proposed increases in their selling prices. Some of the ingot manufacturers told ESA they are reducing selling prices on certain grades of ingots and, accordingly, are reducing their buying prices for scrap.

ESA is formulating policy in respect to nickel scrap. NPA issued order M-22 which aims to prevent undue accumulation of aluminum scrap. It provides that only approved smelters and fabricators may melt, smelt or otherwise use aluminum scrap, except upon special authorization.

C. E. Wilson, director, Office of Defense Mobilization, said the outlook on aluminum is a little better. New facilities will be brought into production in time to avoid "too serious a shortage," he declared. He also predicted that the copper situation would improve as government efforts to step up production take effect.

Cuban Nickel Plant To Open

Washington—Agreements for the rehabilitation and operation of the United States government-owned Nicaro nickel plant, Oriente province, Cuba, have been negotiated. Frederick A. Snare Corp., New York, will put the facilities in operating condition. This agreement calls for about $5 million worth of work. Mining Equipment Corp., New York, will operate the plant on a fee basis. The facilities are expected to be producing nickel oxide in 10 to 12 months. All of the output will be taken by the government. The plant is expected to produce nickel oxide at about 40 cents a pound of contained nickel. The market value is 50.50c.

In addition, under a pilot plant research project, facilities will be developed for using a new process to produce substantial quantities of cobalt as a byproduct.

Mercury Jumps to Record High

New York—Spanish producers of mercury boosted their price for the metal $40 a flask to a record high of $200, Spanish ports. After adding import duties, freight, insurance and other charges this is equivalent to about $223.50 a flask, delivered New York.

In the market here, the price advanced to $233 a flask for lots of from 1 to 5 flasks. This is an advance of about $47 a flask and a new record. The previous high was reached in 1942 when the price was reported around $208.86 a flask.

U. S. Mineral Output Gains

Washington—Value of mineral production in continental United States in 1950 increased 11 per cent over 1949, reports Oscar L. Chapman, secretary of the interior. It totaled $11.7 billion in 1950 compared with $10.6 billion in 1949 and $12.3 billion in 1948, the record year.

Although the huge value reflects a continuation of high prices, the quantity of minerals produced last year was 10 per cent greater than in 1949 and only 4 per cent less than the all-time peak in 1948.

The 1950 output of virtually all metals increased and, collectively, the physical volume was about 14 per cent greater than in 1949. The total value jumped 20 per cent in 1950 to $1,320 million from $1,101 million in 1949; this compared with $2,219 million in 1948.

Production of all metallic minerals, except mercury, increased in 1950. The largest percentage gain over 1949 was reported for tungsten at 60 per cent. Copper, gold, molybdenum, silver and titanium concentrate production each increased 20 to 25 per cent last year over 1949. Output of lead and zinc increased 4 per cent; iron ore, 16 per cent.

Total United States supplies of manganese ore and chromite in 1950 exceeded any previous year despite a small domestic production and virtual embargoes on these materials from Russia, normally a major supplier. Domestic production of manganese was less than 10 per cent of a total supply of 2 million tons.

Mine shipments of tungsten and molybdenum ores and concentrates in 1950 increased 63 and 22 per cent, respectviely, over 1949. A further rise in domestic production is expected in 1951.

Domestic mine production of cobalt held steady, but an increase is expected in late 1951 when the Blackbird mine in Idaho may be brought into operation. Output of copper from domestic mines gained about 20 per cent. Mine production of lead in the United States increased 4 per cent to about 427,000 tons from the 410,000 tons recorded in 1949, while lead imports rose 22 per cent to 488,000 tons. Domestic mine production of recoverable zinc increased to 615,000 tons, 4 per cent above the 1949 figure. Total imports increased 16 per cent over 1949 to 428,000 tons. On the basis of the trend established in the last six months of 1950, mine production probably will approach 660,000 tons in 1951. Imports also will rise, perhaps to 450,000 tons as defense needs accelerate consumption.

Bauxite output increased 15 per cent over the 1.1 million long ton produced in 1949, and imports for the first nine months of 1950, at 1.9 million tons, were 3 per cent less than the receipts in a similar period of 1949. For the fourth consecutive year, ilmenite production was at a record rate, the 1950 output being about 20 per cent higher than the 1949 production of 402,000 net tons.

Magnesium Output To Increase

Midland, Mich.—Dow Chemical Co. this city, has acquired the rolling mill formerly owned by Standard Steel Spring Corp. at Madison, Ill. Dow will use the plant for rolling and extruding magnesium for defense use.

The company has received a letter of intent from the United States government for the reopening of the large plant at Velasco, Tex., which produces magnesium from sea water. The government-owned Velasco plant has an annual rated capacity of 36,000 tons and has been kept in a stand-by condition since World War II. It is expected that partial production will begin by early spring.

More Power for Aluminum Plant

Portland, Oreg.—Additional electric power may have to be diverted by the Bonneville Power Administration to the aluminum industry in view of defense needs, says Paul J. Raver, administrator. The utility had not planned serving additional aluminum-reduction operations other than potlines to be installed near Kalispell, Mont., by Harvey Machine Co. Inc., Torrance, Calif.

The aluminum industry provided 39 per cent of Bonneville's revenue in 1950. During that year, Bonneville broke previous records with an output of 14 billion kilowatt hours. Gross operating revenues were $31,197,515, a gain of 12 per cent. Net revenues were $11,908,967.

November Brass Ingot Output

Washington—Estimated brass ingot production in November totaled 33,785 tons compared with a final total of 35,668 tons in October, reports the Bureau of Mines. Total copper-base scrap consumption in November by secondary copper smelters is estimated at 43,557 tons compared with 44,761 tons in October.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 29.00c; 88-10-2 (No. 215) 43.25c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 25.00c.

Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c, East St. Louis; high grade 18.60c, delivered.

Lead: Common 16.80c; chemical 16.90c; corroding 16.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 30.00-30.50c; No. 12 foundry alloy (No. 2 grade) 29.50-30.25c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 32.00c; grade 2, 30.00-30.25c; grade 3, 29.00-29.50c; grade 4, 28.50-29.00c. Prices include freight allowed up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%+) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, spot, prompt, 176.00c; Feb. 171.00c; Mar. 169.00c; Apr. 167.00c.

Antimony: American 99-99.8% and over but not meeting specifications below 32.00c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 32.50c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%: Chinese 31.00c; English, 32.75c; Belgian, 32.75c, duty paid, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 50.50c; 25-lb pigs, 53.50c; "XX" nickel shot, 54.15c; "F" nickel shot or ingots, for addition to cast iron, 51.00c. Prices include import duty.

Mercury: Open market, spot, small lots, New York, $233 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b., Reading, Pa.

Cadmium: "Regular", straight or flat forms, $2.50 del.; special or patented shapes $2.80.

Cobalt: 97.99+%, $2.10 per lb for 500 lb (kegs); $2.12 per lb for 100 lb (case); $2.17 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 90.16c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 39.93-41.68; yellow brass 36.86-38.28; commercial bronze, 95%, 39.91-41.61; 90%, 39.48-41.13; red brass, 85%, 38.54-40.14; 80%, 38.12-39.67; best quality, 39.15; nickel silver, 18%, 50.37-51.91; phosphor-bronze grade A, 5%, 58.49-60.20.

Rods: Copper, hot-rolled 35.78-37.53; cold-drawn 37.03-38.78; yellow brass free cutting, 31.26-32.63; commercial bronze, 95%, 39.60-41.30; 90%, 39.17-40.82; red brass 85%, 38.23-39.83; 80%, 37.81-39.36.

Seamless Tubing: Copper 39.97-41.72; yellow brass 39.87-41.29; commercial bronze, 90%, 42.14-43.79; red brass, 85%, 41.45-43.05; 80%, 42.28.

Wire: Yellow brass 37.15-38.57; commercial bronze, 95%, 40.20; 90%, 39.77-41.42; red brass, 85%, 38.83-40.43; 80%, 38.41-39.96; best quality brass, 39.44.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 28.67-29.42, l.c.l. 29.17-29.92, 100,000 lb lots 28.545-29.295; weatherproof, f.o.b. eastern mills, c.l. 29.60, l.c.l. 30.10, 100,000 lb lots 29.55; magnet, del., 15,000 lb or more 34.50, l.c.l. 36.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circlet Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.096-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	Round— 17S-T4	Round— R317-T4,	Hexagonal— R317-T4	Hexagonal— 17S-T4
0.125	52.0	....	....	....
0.156-0.188	44.0	....	....	....
0.219-0.313	41.5	....	....	....
0.375	40.0	46.0	48.0	....
0.406	40.0	....	....	....
0.438	40.0	46.0	48.0	....
0.469	40.0	....	....	....
0.500	40.0	46.0	48.0	....
0.531	40.0	....	....	....
0.563	40.0	....	....	45.0
0.594	40.0	....	....	....
0.625	40.0	43.5	45.0	....
0.688	40.0	....	....	45.0
0.750-1.000	39.0	41.0	42.5	....
1.063	39.0	....	....	41.0
1.125-1.500	37.5	39.5	41.0	....
1.563	37.0	....	....	....
1.625	36.5	....	....	39.5
1.688-2.000	36.5	....	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $22.00 per cwt; add 50c cwt 10 sq ft to 140 sq. ft. Pipe: Full coils $22.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 24.50c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 23.50-24.50c; over 12-in., 23.50-24.50c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 71.50c. Strip, cold-rolled 77.50c. Rods and shapes, 67.50c. Plates, 69.50c. Seamless tubes, 100.50c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 57.00c. Strip cold-rolled 60.00c. Rods and shapes, 55.00c. Plates, 56.00c. Seamless tubes, 90.00c. Shot and blocks, 50.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 37.69c; oval 37.19c; cast 37.375c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 61.9c; under 1000 lb 63.9c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 800 lb, 19.00c; 1000 to 19,900 lb, 18.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 29.25c; over 200 lb 28.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 70.00c; 10,000 to 30,000 lb, 68.00c; 3000 to 10,000 lb, 71.00c, 500 to 3000 lb, 72.00c; 100 to 500 lb, 74.00c; under 100 lb, 77.00c, f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 35.00c; 400-lb bbl, 33.00c up to 10,000 lb, 32.50c, over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only; less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 47.7c; 10 or more drums 45.7c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	23.00	23.00	22.25
Yellow Brass	20.125	19.875	18.75
Commercial Bronze			
95%	21.875	21.625	21.125
90%	21.75	21.50	21.00
Red brass			
85%	21.50	21.25	20.75
80%	21.375	21.125	20.625
Munts metal	19.00	18.75	18.25
Nickel, silver, 10%	22.25	22.00	11.125
Phos. bronze, A	24.00	23.75	22.75

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound delivered eastern refineries, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; composition red brass 22.00-22.50; radiators 17.25-17.50; heavy yellow brass 17.00.

* Nominal.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; refinery brass (60% copper) per dry copper content 19.50.

* Nominal.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 20.00; No. 2 18.50; light copper 17.25; No. 1 composition red brass 17.00-17.50; No. 1 composition turnings 16.50-17.00; mixed brass turnings 12.00-12.50; new brass clippings 17.50-18.00; No. 1 brass rod turnings 16.00-16.50; light brass 11.00; clean heavy yellow brass 14.50-15.00; new brass rod ends 16.50-17.00; auto radiators 14.50-15.00; cocks and faucets, 15.50-16.00; brass pipe 17.00-17.50.

Lead: Heavy 14.50-14.75; battery plates 8.75-9.00; linotype and stereotype 14.50-14.75; electrotype 12.75-13.00; mixed, babbitt 12.25-12.50.

Zinc: Old zinc 11.00-11.25; new die cast scrap 10.75-11.00; old die cast scrap 8.00-8.25.

Tin: No. 1 pewter 63.00-65.00; block tin pipe 70.00; No. 1 babbitt 58.00-60.00.

Aluminum: Clippings 28.00-30.00; old sheets 15.50-16.00; crankcase 15.50-16.00; borings and turnings 12.00-12.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Jan. 17-18	24.50	16.80	17.50	176.00	19.00	32.00	50.50	90.16
Jan. 16	24.50	16.80	17.50	175.00	19.00	32.00	50.50	90.16
Jan. 15	24.50	16.80	17.50	172.00	19.00	32.00	50.50	90.16
Jan. 12-13	24.50	16.80	17.50	175.00	19.00	32.00	50.50	90.16
Jan. 11	24.50	16.80	17.50	173.00	19.00	32.00	50.50	90.16
Jan. 10	24.50	16.80	17.50	171.00	19.00	32.00	50.50	90.16
Jan. 9	24.50	16.80	17.50	163.00	19.00	32.00	50.50	90.16
Jan. 8	24.50	16.80	17.50	159.00	19.00	32.00	50.50	90.16
Jan. 5-6	24.50	16.80	17.50	156.00	19.00	32.00	50.50	Nom.
Jan. 4	24.50	16.80	17.50	157.00	19.00	32.00	50.50	80.00
Jan. 3	24.50	16.80	17.50	152.00	19.00	32.00	50.50	80.00
Jan. 2	24.50	16.80	17.50	150.00	19.00	32.00	50.50	80.00
Dec. Avg.	24.50	16.80	17.50	144.74	19.00	32.00	49.40	80.00

NOTE: Copper; Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumers prices, except as otherwise noted, including brokers' commissions, as reported to STEEL, Jan. 18, 1951; gross tons
Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Jan. 18	$46.33
Jan. 11	45.50
Dec. 1950	45.50
Jan. 1950	26.93
Jan. 1946	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt	$46.50
No. 2 Heavy Melt	44.50
No. 1 Busheling	46.50
No. 1 Bundles	46.50
No. 2 Bundles	45.50
Heavy Turnings	47.00-48.00
Machine Shop Turnings	38.50
Mixed Borings, Turnings	38.50
Short Shovel Turnings	40.50
Cast Iron Borings	39.50-40.50
Low Phos. Steel	56.00-57.00

Cast Iron Grades

No. 1 Cupola Cast	*58.00-60.00*
No. 1 Machinery Cast	*68.00-70.00*
Charging Box Cast	55.00-56.00
Heavy Breakable Cast	54.00-55.00

Railroad Scrap

No. 1 R.R. Heavy Melt	46.50
Rails, Random Lengths	64.00-65.00
Rails, 2 ft and under	68.00-69.00
Rails, 18 in. and under	69.00-70.00
Railroad Specialties	*65.50-66.50*

CLEVELAND

(Delivered Consuming Plant)

No. 1 Heavy Melt, Steel	$45.50-46.00†
No. 2 Heavy Melt, Steel	43.50-44.00†
No. 1 Busheling	45.50-46.00†
No. 1 Bundles	45.50-46.00†
No. 2 Bundles	40.00-42.00
Machine Shop Turnings	37.50-38.00
Mixed Borings, Turnings	39.00-40.00
Short Shovel Turnings	39.00-40.00
Cast Iron Borings	39.50-40.00
Low Phos.	48.00-48.50

Cast Iron Grades

No. 1 Cupola	65.00-66.00
Charging Box Cast	53.00-54.00
Stove Plate	55.00-56.00
Heavy Breakable Cast	55.00-56.00
Unstripped Motor Blocks	44.00-45.00
Brake Shoes	50.00-51.00
Clean Auto Cast	65.00-66.00
Burnt Cast	46.00-47.00

Railroad Scrap

No. 1 R.R. Heavy Melt	46.00-46.50
R.R. Malleable	72.00-73.00
Rails, 3 ft and under	70.00-71.00
Rails, 18 in. and under	71.00-72.00
Rails, Random Lengths	64.00-65.00
Cast Steel	58.00-59.00
Railroad Specialties	60.00-61.00
Uncut Tires	60.00-61.00
Angles, Splice Bars	65.00-66.00

† Plus applicable springboards

VALLEY

No. 1 Heavy Melt, Steel	$46.00-46.50†
No. 2 Heavy Melt, Steel	44.00-44.50†
No. 1 Bundles	46.00-46.50†
Facty. Prod. Bundles	46.00-46.50†
No. 2 Bundles	40.50-42.50
Machine Shop Turnings	38.00-38.50
Short Shovel Turnings	40.00-40.50
Cast Iron Borings	40.00-40.50
Low Phos.	48.50-49.00

† Plus applicable springboards

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-46.50

PHILADELPHIA

No. 1 Heavy Melt. Steel	*$47.50*
No. 2 Heavy Melt. Steel	*45.00*
No. 1 Busheling	*45.00*
No. 1 Bundles	45.00
No. 2 Bundles	*44.00*
Short Shovel Turnings	39.00
Machine Shop Turnings	37.00
Mixed Borings, Turnings	37.00
Low Phos. Punchings and Plate, elec. fur. grade	51.00
Low Phos. Plate, 5 ft. & Under	51.00
Elec. Furnace Bundles	48.00-49.00
Heavy Turnings	45.00
No. 1 Chemical Borings	45.00
Knuckles and couplers	56.00-58.00
Steel car wheels	56.00-58.00

Cast Iron Grades

No. 1 Cupola Cast	54.00-55.00
No. 1 Machinery Cast	58.00-60.00
No. 1 Yard Cast	53.00
Charging Box Cast	54.00-55.00
Heavy Breakable Cast	54.00-55.00
No. 1 Wheels	70.00*
Malleable	70.00-72.00

* Nominal

CINCINNATI

No. 1 Heavy Melt. Steel	$46.00
No. 2 Heavy Melt. Steel	44.00
No. 1 Busheling	46.00
No. 1 Bundles	46.00
No. 1 Black Bundles	46.00
Machine Shop Turnings	33.00
Short Shovel Turnings	34.00
Mixed Borings, Turnings	33.00
Cast Iron Borings	34.00

Cast Iron Grades

No. 1 Cupola Cast	70.00
Charging Box Cast	60.00
Stove Plate	55.00
Heavy Breakable Cast	56.00
Unstripped Motor Blocks	42.00
Brake Shoes	37.00
Clean Auto Cast	70.00
Drop Broken Cast	72.50
Low Phos., 18 in. and under	62.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00
R.R. Malleable	64.00
Rails, Rerolling	65.00
Rails, Random Lengths	65.00
Rails, 18 in. and under	72.50

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	$38.25-39.00
No. 1 Bundles	40.25-45.00*
No. 2 Bundles	37.25-37.50
No. 1 Busheling	40.25-45.00
Machine Shop Turnings	32.25-33.00
Forge Flashings	40.25-45.00
Short Shovel Turnings	34.25-35.00
Cast Iron Borings	34.00-35.00
Punchings & Plate Scrap	42.75-46.00

Cast Iron Grades

No. 1 Cupola Cast	*54.00-55.00*
Heavy Breakable Cast	*46.00-48.00*
Clean Auto Cast	*59.00-60.00*

* Top of Jan. 8 price range ($50) represented a maximum delivered price.

BUFFALO

No. 1 Heavy Melt. Steel	$44.50-45.25
No. 2 Heavy Melt. Steel	42.50-43.25
No. 1 Busheling	42.50-43.25
No. 1 Bundles	43.50-44.25
No. 2 Bundles	41.50-42.25
Machine Shop Turnings	36.50-37.25
Mixed Borings, Turnings	36.50-37.25
Cast Iron Borings	36.50-37.25
Short Shovelings	38.50-39.25
Low Phos.	48.25-49.00

Cast Iron Grades

No. 1 Cupola	54.00-55.00
No. 1 Machinery	59.00-60.00
Malleable	nominal

Railroad Scrap

Rails, 2 ft and under	60.00-61.00
Rails, random size	55.00-56.00
Railroad Specialties	55.00-56.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$42.00-44.00*
No. 2 Heavy Melt. Steel	*40.00*
No. 1 Busheling	*41.00*
No. 1 Bundles	*42.00-44.00*
No. 2 Bundles	*39.00*
Mixed Borings, Turnings	*34.00*
Machine Shop Turnings	*34.00*
Short Shovel Turnings	*36.00*
Punchings & Plate Scrap	*44.50*
Low Phos. Plate, 5 ft & under	*44.50*
Elec. Furnace Bundles	*44.50*

Cast Iron Grades

No. 1 Cupola Cast	47.00-48.00
No. 1 Machinery	49.00-50.00
Charging Box Cast	44.00-45.00
Heavy Breakable	44.00-45.00
Unstripped Motor Blocks	41.00-42.00

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$35.67
No. 2 Heavy Melt. Steel	33.67
No. 1 Bundles	35.67
No. 1 Busheling	*33.67*
Machine Shop Turnings	27.67
Short Shovel Turnings	29.67
Mixed Borings, Turnings	29.67
Bar Crops and Plate	44.50-45.00
Punchings & Plate Scrap	44.50-45.00
Chemical Borings	33.00-34.00

Cast Iron Grades

No. 1 Machinery Cast	*50.00-51.00*
Mixed Cast	44.00-45.00
Heavy Breakable Cast	*43.50-44.50*
Stove Plate	42.00-43.00

CHICAGO

No. 1 Heavy Melt. Steel	$45.00
No. 2 Heavy Melt. Steel	43.00
No. 1 Bundles	45.00
No. 2 Bundles	42.00
Machine Shop Turnings	*34.00-35.00*
Mixed Borings, Turnings	*34.00-35.00*
Short Shovel Turnings	*35.00-36.00*
Cast Iron Borings	*35.00-36.00*
Low Phos.	52.00-54.00
Elec. Furnace Bundles	46.00-48.00
Heavy Turnings	41.00-42.00
Cut Structurals	50.00-51.00

Cast Iron Grades

No. 1 Cupola Cast	61.00-63.00
Clean Auto Cast	64.00-65.00
No. 1 Wheels	60.00-62.00
Stove Plate	49.00-50.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-47.00*
Malleable	73.00-75.00
Rails, Rerolling	66.00-68.00*
Rails, Random Lengths	58.00-59.00
Rails, 2 ft. and under	*66.00-67.00*
Rails, 18 in. and under	*67.00-68.00*
Railroad Specialties	*56.00-57.00*
Angles, Splice Bars	*58.00-59.00*

* Brokers' buying price.

BIRMINGHAM

No. 1 Heavy Melt. Steel	*$42.00-43.00*
No. 2 Heavy Melt. Steel	41.50
No. 1 Busheling	*40.00-41.00*
No. 2 Bundles	40.50
Machine Shop Turnings	*34.00-35.00*
Mixed Borings, Turnings	35.50
Short Shovel Turnings	37.50
Cast Iron Borings	*33.00-34.00*
Bar Crops and Plate	46.00-47.00
Cut Structurals	46.00-47.00

Cast Iron Grades

No. 1 Cupola Cast	55.00-56.00
Stove Plate	*49.00-50.00*
No. 1 Wheels	nominal

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.50
R.R. Malleable	nominal
Rails, Rerolling	60.00-61.00
Rails, 2 ft and under	65.00-66.00
Angles and Splice Bars	59.00-60.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$46.00-47.00
No. 2 Heavy Melt. Steel	41.50-42.50
No. 1 Bundles	46.00-47.00
No. 2 Bundles	40.50-41.50
Machine Shop Turnings	33.00-34.00
Short Shovel Turnings	35.50-37.00

Cast Iron Grades

No. 1 Cupola Cast	58.00-60.00
Charging Box Cast	51.00-53.00
Heavy Breakable Cast	56.00-57.00
Brake Shoes	56.00-58.00
Clean Auto Cast	65.00-67.00
Burnt Cast	53.00-54.00

Railroad Scrap

R.R. Malleable	63.00-65.00
Rails, Rerolling	66.00-68.00
Rails, Random Lengths	59.00-61.00
Rails, 2 ft and under	65.00-67.00
Uncut Tires	57.00-58.00
Angles, Splice Bars	66.00-68.00
Railroad Specialties	60.00-62.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$30.00
No. 2 Heavy Melt. Steel	28.00
No. 1 Bundles	30.00
No. 2 Bundles	28.00
No. 3 Bundles	25.00
Machine Shop Turnings	16.00
Low Phos. Electric	45.00

Cast Iron Grades

No. 1 Cupola Cast	43.00-45.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	30.00
Rails, Random Lengths	30.00

SEATTLE

No. 1 Heavy Melt. Steel	*$32.00*
No. 2 Heavy Melt. Steel	*32.00*
No. 1 Busheling	25.50-26.00
Nos. 1 & 2 Bundles	25.50-26.00
No. 3 Bundles	22.00
Machine Shop Turnings	20.00
Mixed Borings, Turnings	20.00
Punchings & Plate Scrap	40.00-44.00
Cut Structurals	40.00-44.00

Cast Iron Grades

No. 1 Cupola Cast	42.00-44.00
Heavy Breakable Cast	38.00-40.00
Stove Plate	36.00-38.00
Unstripped Motor Blocks	33.00-35.00
Malleable	33.00-35.00
Brake Shoes	35.00
Clean Auto Cast	40.00
No. 1 Wheels	40.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*32.00-33.00*
Railroad Malleable	35.00
Rails, Random Lengths	*32.00-33.00*
Angles and Splice Bars	*32.00-33.00*

LOS ANGELES

(Delivered prices)

No. 1 Heavy Melt. Steel	$30.00
No. 2 Heavy Melt. Steel	28.00
No. 1 Bundles	30.00
No. 2 Bundles	28.00
No. 3 Bundles	25.00
Machine Shop Turnings	16.00
Punchings & Plate Scrap	*42.00-45.00*

Cast Iron Grades

No. 1 Cupola Cast	45.00-48.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	nominal
Rails, Rerolling	48.00

HAMILTON, ONT.

(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	30.00
Mechanical Bundles	28.00
Mixed Steel Scrap	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	30.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	23.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings	23.00

Cast Iron Grades*

No. 1 Machinery Cast	50.00

* F.o.b. shipping point.

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Philadelphia 7, Penna.

OFFICES

BIRMINGHAM, ALA. Empire Building
CHICAGO, ILLINOIS 100 W. Monroe St.
HOUSTON, TEXAS 1114 Texas Av. Bldg.
PITTSBURGH, PA. Oliver Building
BOSTON, MASS. Statler Building
CLEVELAND, OHIO 1022 Midland Bldg.
LEBANON, PENNA. Luria Building
PUEBLO, COLORADO 334 Colorado Bldg.
BUFFALO, N. Y. Genesee Building
DETROIT, MICHIGAN 2011 Book Building
NEW YORK, N. Y. 100 Park Avenue
READING, PENNA. Luria Building
ST. LOUIS, MISSOURI 2110 Railway Exchange Bldg.
SAN FRANCISCO, CALIFORNIA Pacific Gas & Elec. Co., Bldg.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Steel Bars . . .

Bar Prices, Page 111

New York—While Washington recently wired producers to step up their minimum quotas on DO orders for March, the instructions came too late in a number of instances for mills to do much about it. At the same time, though, some producers had taken more DO-rated work than their original quotas called for and as a result the effect was about the same as if they had received latest instructions from Washington in ample time. Under the revised order the specified minimum percentages of mill shipments which must be allocated to defense, the quotas on carbon bars were raised from 5 per cent to 10 per cent and on alloy bars from 25 to 35 per cent. The percentage quota on reinforcing bars was boosted from 5 per cent to 15 per cent and on rail steel bars from 5 per cent to 10 per cent.

Boston—On cold-drawn carbon and alloy steel bars, some producers have opened books for April delivery, but have just closed for March on hot-rolled carbon. Rated volume on the latter extends through June. Demand for alloys is strong and is growing for armament contracts. One large producer reduced his carryover of hot-rolled carbon bars by turning down new orders. Although still shipping November and December tonnage, this mill will be about caught up for new business by February. Forge shops continue to be a heavy consumer in this area.

Philadelphia—Due to Washington's latest order increasing minimum mill quotas for military work, hot carbon bar sellers are promising better deliveries on DO-rated orders. Whereas some were booked into June, they now are accepting business for as early as April. Meanwhile, there is a steady increase in DO-rated orders, which are coming out from a diversity of sources.

Pittsburgh—Rated tonnage set-asides, beginning with March shipments, have been revised upward from 5 to 10 per cent on hot-rolled carbon bars; from 5 to 15 per cent on reinforcing; and from 10 to 15 on carbon coldfinished bars. Hot-rolled alloy bar percentage set aside has been increased from 25 to 35 per cent and alloy coldfinished bar set-aside from 15 to 25 per cent; maximum rated tonnage bookings for all alloy semifinished products have similarly been revised upward from 25 to 35 per cent. In addition to increased requirements for military end uses, there is every prospect shipments will be augmented over coming months for indirect war programs.

Cleveland—Further tightening in supply of bars for civilian goods account is already being felt as result of the increase in percentage set-aside for DO orders. Producers are booked well into second quarter on so-called essential business and there is little prospect of any opening in schedules in the weeks ahead. More consumers are getting into defense work and this is resulting in a rising load of DO and other defense business on the mills.

Chicago—Supply of all types of bars for civilian use will tighten appreciably in the next few months with NPA revising upward "DO" percentages which barmakers must provide starting with March shipments. Carbon grades are raised from 5 to 10 per cent; alloy, from 25 to 35 per cent; reinforcing, from 5 to 15 per cent; rail steel bars, from 5 to 10 per cent. On this schedule, April is the first month one local mill has openings for DO tonnage on alloy and rail steel bars; May-June rolling, for carbon bars. Civilian accounts can expect to receive from this point no less than 50 per cent of average tonnage obtained in first eight months last year.

Los Angeles—Deliveries of nonrated hot-bars to cold-drawers are down 30-40 per cent compared with same period last year. Cold-finishers are booked three-five months ahead.

Sheets, Strip . . .

Sheet and Strip Prices, Page 111 & 112

Chicago — Consumers are due for sharp cutbacks in their mill receipts of sheets and strip in the next few months because of accelerating requirements for direct defense and support programs. "DO" orders which producers are required to take have been increased, effective with March shipments: Hot and cold-rolled sheets, from 10 to 12 per cent; hot-rolled strip, from 5 to 10 per cent; galvanized and electric sheets, from 5 to 7 per cent. In the case of one local mill, May is first month open for DO orders for hot and cold-rolled sheets; April for hot-rolled strip, electrical and galvanized sheets. In the next two months, shipments of sheet and strip for civilian use probably will not exceed 50 per cent of average shipments for first eight months of 1950.

New York—As some sheet producers had already taken more DO-rated tonnage for March than minimum quotas called for, recent instructions from Washington to increase quotas for military needs did not affect sheet distribution to nonrated consumers as much as might otherwise have been the case. Moreover, in instances where producers had not accepted more DO-rated tonnage than the original minimum quotas called for, instructions were received too late for them to include more rated work in March. Hence, there were no important curtailments in distribution of nonrated tonnage in these cases. The increases in hot and cold rolled sheet quotas, under the revised order, were from 10 per cent to 12 per cent, galvanized sheets and electrical sheets from 5 per cent to 7 per cent and in hot rolled strip from 5 per cent to 10 per cent.

Boston—While producers of cold-roll'ed strip are sold through the first quarter, nonintegrated mills are confronted with schedule revisions due to uncertain supply of hot-rolled material. This is more apparent in carbon, notably low carbon, than in alloy. Supply of hot-rolled material also has narrowed with price spreads affecting cold-finished products.

The Wallingford, Conn., producer has placed in operation new gas-fired annealing equipment, more than doubling capacity.

Pittsburgh—Anticipated increase in maximum percentage set-asides for sheet and strip DO rated tonnage materialized last week through further amendment of M-1 by NPA. The percentage for hot and cold-rolled sheets has been increased from 10 to 12 per cent; electrical (carbon and alloy), galvanized and all other coated sheets from 5 to 7 per cent, and hot and cold-rolled strip from 5 to 10 per cent. The above action is expected to help remedy the extended delivery promises the mills have been forced to make on new orders for essential end uses. Customers' allotments for general use will be correspondingly reduced.

Recent revisions in sheet extras by some producers have not been uniform, while other interests have not taken any action other than to revise base prices upward early last month. Different extras now are quoted on size, physical quality, special killed, drawing quality, special soundness, restricted thickness tolerance, and item quantity.

Cleveland—Rising defense requirements will force further cutbacks in quotas to commercial accounts over the next several months. Impact of the increase in DO set-asides, to 12 per cent on hot and cold-rolled sheets, to 10 per cent on hot-rolled strip and to 7 per cent on galvanized and silicon sheets will be felt almost immediately. The increase in set-asides is effective with March shipments. Conversion of some continuous mills to production of plates also will cut into light, flat-rolled tonnage for the general market on an increasing scale over coming months. The fact that most builders of motor cars will cut production 20 to 25 per cent this quarter will take some pressure off the sheet market but will result in no improvement in supply conditions for the general trade.

Cincinnati — March allotments of sheets by mills are about ready, as lead time is up. These show the increasing inroads being made by rated orders. Less tonnage is left for nondefense requirements than in February. Tight supplies in galvanized, long ternes and stainless are also due to restrictions on nonferrous metal shipments to mills. A hot strip mill of Armco Steel Corp., down two weeks for revamping, was restored to production on schedule.

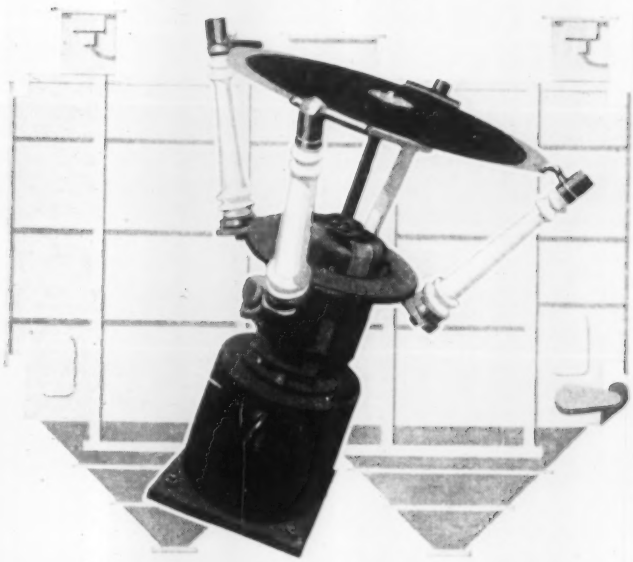
Birmingham — Sheet supplies are still gradually tightening. Moderate increase in DO orders is evident, but sheets would be tight even if there were no such orders. Small manufacturers with no regular source of supply and those ordinarily dependent upon warehouses are especially hard hit.

Los Angeles—Small fabricators' flat-rolled defense needs are amply met by warehouse practice of setting aside sheets for DO orders. Inability to get enough sheets causes some large users to cut-back operations.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 111

Philadelphia — Approximately 17,000 tons of reinforcing bars will be required for substructure work at the proposed Morrisville, Pa., plant of the United States Steel Co. Meanwhile contracts on various preparation of site contracts will probably be let early in February.



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Plates . . .

Plate Prices, Page 111

Philadelphia—Plate producers believe that within another week they will have a better idea as to what they will be called upon to supply for allocation programs in second quarter. Some anticipate a modest stepping up in car requirements, especially for maintenance and repair work and probably needs of new programs, including locomotive construction and repairs, rolled armor plate, petroleum facilities and possibly other preference programs as well. While these schedules would step up their rated commitments they might not add too greatly to their overall specifications for the reason that considerable steel is already going to these various industries. However, they see nothing ahead but capacity operations for months to come. Due to an unauthorized strike of pit workers, Lukens Steel Co. recently lost three days open hearth production.

Boston—Plate mills are booked through April on directly rated tonnage, while most mills are booked beyond that date on essential program tonnage. As more plates are earmarked for specific needs, less are available for open allocations. Most fabricating shops without rated tonnage are getting less in March schedules. More shipbuilding looms in this area, including merchant as well as warships. This is expected to release more subcontracting business to shops currently handicapped by lack of rated orders.

New York—While Washington recently established higher percentage rates on a number of products for DO-rated orders, the 15 per cent quota on plates was left unchanged. As a result, some mills in setting up their final schedules for March had as much, if not a little more, non-rated tonnage to offer than in February, the shorter month. However, this was not true with all mills, some of which took more than their 15 per cent minimum quota and therefore have actually less commercial tonnage to distribute in March than in the preceding month.

The 50 merchant ships on which the Maritime Administration will open bids Jan. 31, as noted in last week's issue, will require a total of 225,000 tons of hull steel, or 4500 tons per ship. Sixty per cent of the requirements will be plates, 35 per cent snapes and 5 per cent bars.

Pittsburgh—Preferred tonnage requirements for plates is expected to increase during second quarter. Trade anticipates action by NPA toward establishing an estimated 30,000-ton monthly set aside of all steel products for a barge program, while a similar program for locomotives is expected to require 183,000 tons of carbon steel and 27,000 tons of alloys in second quarter. Some tonnage set asides soon are also expected for components of the petroleum industry, such as pipe lines, tank cars, etc. A number of producers are rolling light plates on strip mills and this trend likely will continue, particularly if merchant ship construction is initiated on a large scale.

Chicago—Demand for plates continues to mount, both for defense and civilian consumption. There is little likelihood that a high proportion of the latter can be accommodated without government allocations or ratings. April is the first month one plate producer here can take additional DO tonnage. Civilian users of plates will be fortunate if they receive in the next few months as much as half of their average receipts during first eight months of 1950.

Birmingham—Plate users are in their usual quandary. Tank producers, fabricators of structural steel and carbuilders are taking the bulk of output. Each industry could use more. Miscellaneous users are getting plates spasmodically and distributors have virtually no stocks.

Seattle—Scarcity of plates, stainless steel and aluminum is seriously cramping plate fabricators. Tank installations are planned for Anchorage, Alaska, Atomic Energy Commission, Idaho, Hanford plutonium works and at Tacoma by General Petroleum Corp. Small shops are curtailing operations due to scarcity of materials. Order backlogs are fair.

Structural Shapes . . .

Structural Shape Prices, Page 111

New York—The government's ban on commercial building, subject to certain provisos, is expected by fabricators here to hit the New York area harder than in many other leading metropolitan areas. This is because they do not anticipate industrial construction, which would be given the green light in most cases, to compensate for the reduction in commercial work.

The new government order which extends an earlier ban on construction of recreational buildings to all commercial structures costing more than $5000, in an effort to save steel, cement and other building materials for defense and industrial requirements, holds up new work on commercial structures until Feb. 15 after which licenses will be required for such commercial work as NPA may approve as being assential to defense, health, welfare or to prevent hardship.

This further restriction, so fabricators point out, may affect such an outstanding job as the Uris Bros. office building, on which bids for 6000 tons of steel were recently asked. This building is for erection on a site now occupied by the Ritz Carlton Hotel, Madison Ave. and 46th St. On the other hand, a new project which undoubtedly will not be affected is a 6300-ton power house for the City Board of Transportation on 74th street, Manhattan, on which steel bids will be closed Feb. 9. There will also be various other public jobs, such as bridges and viaducts, which should tend to sustain structural activity in this area. Currently a substantial tonnage is active, including the recently noted 9000-ton project for the Jones Beach Authority.

Philadelphia — Structural awards currently are light, although inquiry is featured by 6000 tons for a power plant for the Philadelphia Electric Co. at Cromby, Pa., and 4000 tons for a power plant for atomic development in South Carolina.

Boston—Bulk of private construction is now rated with deliveries several months ahead of other tonnage. Some shipments for bridge work range up to 15 months. Allocations of plain material are below normal, but district shops are able to promise six to eight months delivery by augmenting supplies from regular sources with purchases from other suppliers, often at high prices. As a result, fabricated structural prices are generally higher.

Considerable bridge volume is held in abeyance due to extended deliveries and uncertainty as to final approval of some projects.

Pittsburgh—Scarcity of standard shapes and wide flange beams for non-essential use is expected to become more acute over coming months. In addition to steadily expanding direct and indirect military needs the amount of structural steel needed for the projected steel expansion programs will take a larger portion of output. Increasing tonnage requirements for essential uses has prompted NPA to revise upward the maximum percentage set-aside for rated orders from 15 to 20 per cent.

Chicago—New NPA restrictions on construction of commercial buildings are not expected to ease materially the shortage of structural shapes. Recent inquiries for new construction have included few projects in this category. Supply for civilian account will tighten in March because of the upward revision in percentages, from 15 to 20 per cent, which shape producers are required to provide for DO use. First month in which a local shape maker has opening for additional DO tonnage is April.

Los Angeles — Light structural shapes, 2 x 2 x ¼ inch angles from Japan are offered for January delivery at $168 per ton, f.o.b. Los Angeles harbor. Construction of $6 million Riverside, California unit of University of California will start immediately. Completion is scheduled by 1952 — shortages and construction bans permitting.

Seattle—Seasonal drop in inquiry for small tonnages of structurals is reported by fabricating plants, but operations will be stepped up in the second quarter as many important projects are up for early award.

Tubular Goods . . .

Tubular Goods Prices, Page 114

Pittsburgh—Rated tonnage bookings of carbon cold-drawn seamless mechanical tubing extend into July among most producers. Deliveries on alloy grades are extended into November in some instances. Some relief in this latter situation is anticipated by recent action of NPA in increasing the maximum percentage set aside for mechanical alloy tubing from 25 to 35 per cent and initiating a 25 per cent set-aside for stainless tubing. Establishment of specific tonnage program for the overall petroleum industry is not considered likely by the trade. A probable alternative may be to fix definite tonnage commitments on a monthly basis for some of the major

components of the industry, such as pipe lines, tank cars, etc.

Seattle—Interest in cast iron pipe is increasing as municipal seasonal requirements are being surveyed. Slow deliveries are handicapping agencies for eastern plants.

Wire . . .

Wire Prices, Page 113

Boston—Demand for wire and wire specialties is unabated with the exception of some easing in pressure from the automotive industry. The latter has deferred shipments in scattered instances. Mechanical spring requirements are stronger, due in part to armament equipment assemblies. Most mills are sold out through this quarter on galvanized wire, some operating under capacity due to limited zinc supplies.

Washburn Wire Co., Philipsdale, R. I., is putting into operation late this month new open-hearth facilities, increasing ingot tonnage for rods about 35,000 tons.

Pittsburgh—Sellers note steadily increasing tonnage requests covering essential end uses. The tight supply situation prevailing throughout the entire range of wire products is particularly acute in connection with high carbon drawn wire and in the semifinished classification of wire rods. To help remedy the extended deliveries currently promised by mills on rated tonnage, NPA has raised the maximum percentage set-aside, starting with March shipments, from 5 to 15 per cent on high carbon drawn wire and from 5 to 10 per cent on wire rods.

Birmingham—Most wire products are acutely short. Production is maintained at or near capacity, except when pressure for ingots elsewhere cuts the schedule. Demand for nails and fencing, especially, is considerably greater than current supply.

San Francisco—Wire rope is moving toward the scarcity column. Wire rope usually is the last item to feel a "pinch."

Warehouse . . .

Warehouse Prices, Page 115

Philadelphia — Warehouses are scraping the bottom of the barrel in an effort to meet current demands for sheets, plates and some specifications in shapes and bars. Actually they are falling far short in supplying all the tonnage requested. Prices are unchanged.

Cleveland—Increase in the percentage set-asides for DO account on the various steel products will result in further shrinkage in warehouse stocks since replacement tonnage of the warehouses for commercial business will be proportionately reduced. NPA order M-6 has not done much to help the distributors replenish their depleted inventories and no improvement in the situation is anticipated. Expectations in the trade are that any freeze of mill prices effected by government stabilization authorities will apply similarly to warehouse quotations.

Cincinnati—Demand for warehouse steel is more aggressive than at any time during World War II. Meanwhile, inventories evaporate despite careful screening of orders, and mill shipments fail to reach a volume anywhere near the level of needs. DO orders are not a serious factor; neither is the gray market.

Chicago — Each succeeding month sees warehouse receipts of steel from mills impaired by growth in DO requirements and support programs. The tonnage available by application of the M-6 regulation percentage is shrinking, raising the question as to how far the level can drop before the government takes corrective action. Meanwhile, warehouses are confronted with more demand than they can accommodate and are obliged to allocate to their customers.

Birmingham — Warehouse steel stocks are still on the short side in most instances. Warehousemen are not able to obtain satisfactory commitments and are hard pushed to supply even moderate need of many of the district's smaller steel users, particularly in sheets and plates.

Los Angeles—Lower inventories, receipts, and sales spur warehousemen to increase bookings of DO orders. DO sales of one distributor are only 8-10 per cent of total shipments.

Seattle—Distributors are trying to make the best of a bad situation. All important out-of-stock items are extremely scarce. Demand continues insistent, consumers being anxious to cover needs before government cracks down more severely. Shapes are in fair supply, but spotty. Stainless, plates, sheets and cold-finished items are acutely short. Inventories are in bad shape and the future offers no immediate hope of improvement.

Tool Steel . . .

Tool Steel Prices, Page 113

Pittsburgh—Tool steel producers have advanced prices 2 to 13½ cents a pound on those grades containing tungsten. Price of ferrotungsten has risen from $2.50 per pound of contained tungsten early in fourth quarter to $3.25 per pound on January shipments, and price trend is expected to continue upward for suppliers contend that the current market price replacement for raw material is higher than present quotations are based upon.

Producers of cobalt-bearing high temperature and electrical alloys also have increased prices 7½ per cent. Cobalt metal is now quoted at $2.10 per pound, against $1.80 throughout all of 1950.

Increased production costs also have resulted from an advance in ferrocolumbium from $3.50 per pound of contained columbium last April to $4.90 on Jan. 1, 1951.

Sharp increase in activity is noted among tool makers, resulting in lengthening order backlogs on tool steel producers' books, which are extended 3 months or longer in most instances. Through close control of shipments from stocks tool steel producers have been able to maintain fairly balanced inventories. Most interests are operating two or three turns, 6 days per week.

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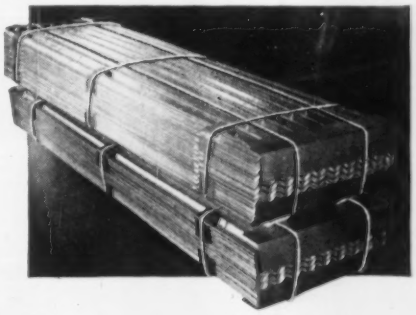

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Ferroalloys . . .

Ferroalloy Prices, Page 115

Azusa, Calif.—The only tungsten reduction plant on the West Coast faces shutdown due to lack of scheelite concentrates. Martin F. Coleman, owner, says prices of tungsten concentrates, doubled since the start of the Korea war, caused a wild buying scramble, choked off his supplies.

Pig Iron . . .

Pig Iron Prices, Page 116

Cleveland—Growing shortage of pig iron for the merchant trade is expected to bring action by government distribution authorities in the way of more formal allocation on DO and other emergency account. Sellers are allocating their tonnage among customers as equitably as possible but with defense demands rising distribution is becoming increasingly dislocated. So far no foundry shutdowns for lack of pig iron have been reported but the castings shops are unable to accumulate reserves. More scrap is being used in melts and some shops have been looking to foreign suppliers for supply assistance.

New York—Most pig iron consumers here have been able to sustain shipments so far despite the growing stringency of domestic iron. This has been made possible in part by an increasing amount of foreign iron, although purchases in this area have not generally been as heavy as in some other seaboard districts, and by greater use of scrap and ferroalloys, which latter is used to bring up the analysis of the melt. However, there are indications that there may soon be a limit to how much of this can be done, for some sellers of ferroalloys are now already a month behind on their delivery promises.

On the other hand, the oven coke situation does not appear to be quite as threatening as a while ago. At least there is some promise of relief as more gas is being piped into the east, thus relieving pressure on water gas coke which eventually should make way for more oven coke for metallurgical purposes.

Boston—Foundries with contracts with Mystic Iron Works are taking allocations in full and some would accept more tonnage, if it were available. The Everett, Mass., furnace is operating to extent permitted by its ore supply which is out of balance. Some malleable grades are short and foundry iron is substituted. Melt in New England is heavier, although iron supply is not yet critical despite inability of some outside units to furnish all tonnage wanted.

Buffalo—The rush for merchant pig iron continues. Sellers report keeping a keen eye on shipments, but admit it is left to the buyer to figure where the iron shall be used. With only a voluntary allocation system in effect, melters would have to eliminate production of civilian items to fill government jobs. Sellers also report that the only time now that iron is being piled is when railroad cars are not available. Output holds at 100 per cent.

Philadelphia—Stringency in pig iron is becoming pronounced. Foreign arrivals are helping some, but still leave much demand unsatisfied. Were it not for a substantial increase in consumption of scrap and ferroalloys many shops would be forced to curtail operations materially. One large district steel mill has been unable to reach peak operations due primarily to shortage of pig iron.

Through typographical error, reference was made last week to the arrival of 70,000 tons of Dutch iron; this should have read 10,000 tons.

Pittsburgh—Some form of voluntary or formal directive pig iron distribution program to assure adequate supplies for direct and indirect military needs is believed in the offing. Coupled with this action some sellers anticipate a government directive preventing the use of pig iron in the production of castings for many nonessential uses. Substantial reduction in bookings is noted among foundries serving consumer durable goods industries. Full production schedules, limited only by manpower and materials, are indicated throughout this year among foundries supplying the railroad, farm implement, machine tool and heavy machinery groups.

Cincinnati—A bright spot in the pig iron market is the steadiness with which furnaces are holding to allotment and delivery promises. The dark side of the picture is the pressing demand for more tonnage as melters try to increase output and to cut ratio of scrap in melt. Available tonnage of iron is being distributed on a quota basis and without serious inroads so far from DO orders.

Birmingham—Scarcity of certain materials, notably brass, has slowed production in some lines with the result that pig iron demand from these users has tapered. Result is negligible, however, since there are takers for every pound of merchant iron the district can produce.

San Francisco—Sources for pig iron constantly are being pursued. One major steel producer has been importing substantial tonnages from Europe, India, and Chile, as domestic sources fail by a large margin to meet requirements. Foreign pig iron is cheaper than domestic grades, but one large foundry says there is a tendency for price increases by suppliers outside the country. Iron casters acknowledge a "tightening" in pig iron supplies, but so far their operations have not been hindered because of this situation.

Iron Ore . . .

Iron Ore Prices, Page 115

Cleveland—Group of steel producers is negotiating with Steep Rock Iron Mines Ltd. for an option to lease certain iron ore property in the Steep Rock area of western Ontario, Can. Pickands, Mather & Co. is acting for the group which in addition includes Youngstown Sheet & Tube Co., the Steel Co. of Canada, Ltd., Interlake Iron Corp., and Bethlehem Steel Co.

Inland Steel Co. some time ago arranged for operations in the area and Republic Steel Corp. is understood to have been receiving ore from Steep Rock area.

The property under consideration for exploration and option covers more than 1000 acres and is in the general area where Inland Steel obtained its option about a year ago. Cleveland-Cliffs Iron Co. acts as sales agent for ore mined by Steep Rock Iron Mines, Ltd., up to 1,500,000 tons annually.

Scrap . . .

Scrap Prices, Page 118

Philadelphia—Due to raiding by western mills, district steel scrap buyers have advanced prices to meet the competition. This is the second time that the top has been blown off the formula prices and largely for the same reason. No. 1 heavy melting steel and No. 1 bundles are up $2.50 a ton to $47.50; No. 2 heavy melting and No. 1 busheling, up $2 to $45; No. 2 bundles, $2 to $44.

This comes at a time when it appeared there would be a rollback of about $1.50 on No. 1 steel. If the government were to roll back prices to the levels indicated, it would now have to knock off $4. However, the whole situation is very much up in the air. Momentarily there has been no change in low phos scrap, but this may come at any time; nor has there been any change in the other steel scrap grades. Cast grades also are unchanged.

Buffalo—Weather conditions aided dealers in obtaining supplies to ship against old orders during the week. Two of the three leading mill consumers in this area have been making heavy drains on reserve stockpiles to maintain production. Additional concern is apparent over supplies. Prices are nominally unchanged as interest is shown in developments on controls and allocations.

Pittsburgh—Little activity in respect to purchase of dealer scrap is in evidence as mills continue to receive shipments on previous commitments and generally are delaying making additional large tonnage purchases pending decision on price controls. Reports of higher prices paid by mills in other districts for No. 1 heavy melting steel could not be confirmed here, while limited new tonnage purchases in this district have been at previously reported formula price levels. Railroad specialties are up about $1 on basis of recent awards; prices paid for other railroad items are unchanged. Growing pig iron shortage continues to add fuel to upward trend in prices for cast grades with increase of $2 noted this week for No. 1 cupola and machinery grades, which are now quoted within range of $58-$60 and $68-$70, respectively.

Boston—Steel scrap buying is at formula prices, based on $8.58 freight to Bethlehem, Pa., with usual differentials between grades holding. Due to talk of a rollback in prices, consumers of cast scrap are not buying heavily and in many instances are operating off inventory, built up several weeks back. Reserves in some cases are now getting low.

Cleveland—Undertone of the scrap market was strong here last week, but published prices remained unchanged. Supplies of open-hearth grades are scarce, although the movement of material is being maintained at a fast clip. Brokers and dealers

are anxious to move as much material as possible before the price rollback becomes effective, expected momentarily. Some trade interests are concerned over reports that no time will be allowed to complete commitments at the old price levels. Blast furnace grades are not moving well, the principal buyers having withdrawn from the market; foundry grades, however, continue in active demand.

Detroit—Until scrap is placed under price control, two prices for most grades comprise the market. Relatively little tonnage is moved above the formula, but that small percentage which supplies some of the electric furnace operators is of extreme importance to them. Because of their conversion work they are not able effectively to demand return of scrap on allocation and consequently pay the premium. Cast material has definitely weakened because of withdrawal by foundries.

Cincinnati—Scrap market is marking time with prices unchanged. Dealers are shipping freely, lest accumulations be caught in a rollback.

Birmingham — Scrap market remains virtually unchanged, although several "adjustment" prices were announced last week.

Chicago—Further price weakness ranging from $1 to $2 a ton developed in blast furnace and specialty grades of scrap. This easing is attributed to lessened demand springing from consumers holding back on purchases until government price policy is established.

New York—Brokers' buying prices on open-hearth grades of scrap advanced sharply last week. Most brokers stepped up their offerings at least $3 on No. 1 heavy melting and No. 1 bundles; some boosted them as much as $5. For the moment, the market may be regarded as holding at $42-44, f.o.b. shipping point, on these grades. No. 2 heavy melting steel rose $3 to $40; No. 2 bundles to $39. No. 1 busheling is higher at $41. There was a general increase of $3 on mixed borings and turnings and machine shop turnings to $34 and on short shovel turnings to $36. Punchings and plate scrap, low phos plate, 5 ft and under, and electric furnace bundles advanced $3 to $44.50. The break in formula prices is ascribed primarily to higher prices being paid by eastern consumers in competition with midwestern mills and to an effort to eliminate upgrading in various instances.

Los Angeles—Demand for steelmaking scrap is stronger. Supplies are short, particularly No. 1 heavy melting. Punchings and plate scrap, now $42-45, is up $2-5.

Seattle—Scrap supplies are becoming scarcer. Receipts are slow and mills are consuming shipments as quickly as they arrive. Some form of government aid is required, buyers state, if mill operations are to continue at present levels. Sources of supply appear to be frozen, sellers apparently hoping for higher ceilings. The largest buyer in this area has advanced No. 1 and No. 2 heavy melting from $28 to $32; similar increases are effective for railroad scrap. No. 1 electric furnace is strong at $40 to $44.

Fluorspar . . .

Fluorspar Prices, Page 114

San Francisco — Efforts to keep fluorspar supplies more nearly abreast of the mounting demand occasioned by the stepped up steel production program will be aided by a rejuvenated operation at the Baxter mine in Mineral county, 78 miles southeast of Fallon, Nev. The mine has been purchased for $350,000 by H. W. Gould & Co., San Francisco mining firm, long identified with the California quicksilver industry. The Gould firm will build a mill.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 114

Gary, Ind.—United States Co. announced completion of reconstruction and expansion of its No. 13 coke oven battery at its Gary Steel works. Started in December, 1949, the No. 13 battery has been enlarged from 69 to 77 ovens, increasing the plant's annual production from 340,000 to 380,000 tons. A corresponding project is underway at the No. 15 battery. This will be expanded from 69 to 77 ovens, but will not be completed until about July, 1951.

San Francisco—Koppers Co.'s backlog of orders for coke ovens is the largest in history, says Walter C. Perkins, vice president and general manager of the company's Metal Products Division. He was here with J. L. Tunstead, sales manager, for sales meetings and to inspect West Coast warehouses. Mr. Perkins said the company's Engineering and Construction Division, engaged in the building of coke ovens and chemical plants, will be at peak operation during the next few years because of the increased steel program.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1650 tons, structures and transmission towers for Bonneville Power Administration, to Creamer & Dunlap, Tulsa, Okla., low on two schedules, $173,792 and $133,035 respectively.

STRUCTURAL STEEL PENDING

6300 tons, power house, Municipal Board of Transportation, 74th St., Manhattan, New York; bids Feb. 9.

6000 tons, Uris Bros. office building, Madison Ave. and 46th St., Manhattan, New York; bids asked.

6000 tons, power house, Philadelphia Electric Co., Cromby, Pa.; pending.

2200 tons, cantilever type bridge over Columbia river, The Dalles, Oreg.; Guy F. Atkinson Co., Portland, Oreg., apparently low $1,988,572.

2000 tons, heating and power plant, Fort Richardson, Alaska; Patti-MacDonald Co., Kansas City, Mo., low $9,200,000, to U. S. Engineer.

1500 tons, Ross dam power house; plans prepared; bids to Seattle light department about Feb. 15.

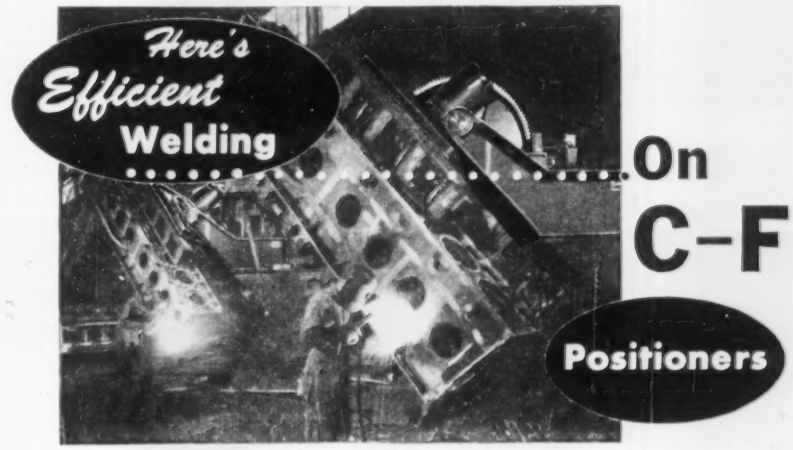
570 tons, state bridge, New Castle county, Delaware; bids Feb. 6.

360 tons, Du Pont plant building, Gibbstown, N. J.; bids asked.

110 tons, Curry county, Oregon, Bureau of Public Roads bridge; Poole, McGonigle & Dick, Portland, Oreg., low $35,050.

135 tons, including sheets, plates and miscellaneous; bids to Federal Supply Service, Seattle, Jan. 17.

Unstated takeoff structures, etc.: Hungry Horse



When heavy, unwieldy weldments like these diesel crank cases can be quickly swung into any position so that every weld is made downhand—that's efficient welding!

Welders spend more time welding—do better welding at lower cost when they work with C-F Positioners because these hand and or power operated machines reduce positioning time to a minimum. Investigate the cost-saving advantages of C-F Positioners. They pay their way in any company.

Write for Bulletin WP24—an illustrated circular detailing the specific advantages of C-F Positioners.

CULLEN-FRIESTEDT CO.

1308 S. Kilborn Ave., Chicago 23, Ill.

CULLEN-FRIESTEDT CO., CHICAGO 23, ILL.

C-F positioned welds mean better, more economical welds

power plant, Montana; bids to Bureau of Reclamation, Denver, Jan. 18; bids opened Jan. 2 rejected.

REINFORCING BARS . . .

REINFORCING BARS PLACED

750 tons, warehouse, Kinsey Distilling Corp., Linfield, Pa., through McCloskey Co., contractors, Philadelphia, to Bethlehem Steel Co.

300 tons, Eielson Field, Alaska, military heating plant, to Northwest Steel Rolling Mills Inc., Seattle.

REINFORCING BARS PENDING

3000 tons, second unit Seattle traffic viaduct; bids in Jan. 16.

2000 tons, Ross dam power plant; bids to Seattle light department about Feb. 15.

1500 tons, plus 240 tons of sheet piling, power plant, Philadelphia Electric Co., Cromby, Pa.; pending.

375 tons, Wasco county, Oregon, Columbia river bridge, The Dalles; Guy F. Atkinson Co., Portland, Oreg., apparently low.

100 tons or more, 965-foot state highway bridge, Coos county; bids to Oregon Highway Commission, Portland, Oreg., Jan. 24.

Unstated, $1½ million grain elevator, Kennewick, Wash., for North Pacific Grain Growers Inc.; general contract to Henry George & Sons, Spokane, Wash.

PLATES . . .

PLATES PENDING

Unstated, bulk, liquid fuel tanks and system, Anchorage, Alaska; E. V. Lane, low base bid, $354,738, to U. S. Engineer.

Unstated, welded water tank for Palisades camp, near Irwin, Idaho; bids to Bureau of Reclamation, Denver, Feb. 15.

Unstated, additional tank capacity for General Petroleum Corp., Tacoma, Wash., plant; bid date unstated.

PIPE . . .

CAST IRON PIPE PLACED

250 tons, 8 inch for local improvement, Seattle; to Pacific States Cast Iron Pipe Co., Provo, Utah, delivery 60 days.

CAST IRON PIPE PENDING

1100 tons, McKenzie Highway water district, Eugene, Oreg., 18 to 3 inch mains and fittings; bids Jan. 22.

RAILS, CARS . . .

RAILROAD CARS PLACED

Ford Motor Co., 120 special 70-ton mill type gondola cars (for handling hot billets in blast furnace and rolling mill service), to Greenville Steel Car Co., Greenville, Pa.

FERROALLOYS

(*Continued from page 115*)

4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Low-Carbon Ferrochrome: (Cr 67-72%.) Contract, carload, lump, bulk, max. 0.03% C 33.60c per lb of contained Cr, 0.04% C 31.50c, 0.06% C 30.50c, 0.10% C 30.00c, 0.15% C 29.75c, 0.20% C 29.50c, 0.50% C 29.25c, 1% C 29.00c, 1.50% C 28.85c, 2% C 28.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N, add 5c for each 0.25% of N above 0.75%.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. S M x D, bulk, 23.25c per lb of contained Cr, c.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract Carload packed, S MxD, 16.35c per lb of alloy; ton lot 17.2c; less ton lot, 18.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34.41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus 11.60c per pound of contained silicon, f.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 36-38%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained chromium plus 12.4c per lb of contained silicon plus aluminum, 3" x down, delivered.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D, packed, max 0.50% C grade, $1.08 per lb of contained chromium, ton lot $1.10, less ton $1.12. Delivered. Spot add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $3.25 per lb of contained W; 2000 lb W to 10,000 lb W, $3.35; less than 2000 lb W, $3.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $4.15 per lb of contained W; less than 1000 lb W, $4.25.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.00c per lb of contained Si; packed 21.00c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered, Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk 15.55c per lb of contained Si, carload packed 16.8c, ton lot 17.8c, less ton 18.95c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.) Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.5c per lb of contained Si, carload packed 18.7c, ton lot 19.65c, less ton 20.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.) Add 0.7c to 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 20.0c per lb of Si, c.l. packed 21.2c, ton lot 22.1c, less ton 23.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe.) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3⅛ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton lot 16.0c, less ton 16.9c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.95c per lb of briquet, c.l. packaged 11.75c, ton lot 12.55c, less ton 13.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3⅛ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 11.15c, per lb of briquet, c.l. packed 11.95c, ton lot 12.75c, less ton 13.65c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si) Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.55c, less ton 9.45c. Delivered. Spot, add 0.25c.
(Small size—weighing approx 2¼ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2¼ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.). Contract, ton lots, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-44%, Al 5% max., Si 4% max., C 0.10% max.) Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract, $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $3.10 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3.20. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6 98c; No. 79, 56c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Zirconium Alloys

12-15% Zirconium Alloy: (Zr 12-15%, Si 38-43%, Fe 40-45%, C 0.20% max.). Contract c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (18% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min., C 0.30 max.) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, delivered; less ton lots $3.80.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.50-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24%. P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Sigle, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth, $1.32; Washington, Pa., furnace, any quantity $1.12.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth $1.14, packed in bags containing 20 lb of molybdenum; Washington, Pa., 95.00c.

Metalworking Briefs . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

California

Republic Heater Corp., Huntington Park, Calif., is constructing a plant, representing an investment of about $1 million in land, building and equipment, in the Los Angeles International Airport Industrial tract. The plant was designed by S. Charles Lee, architect. The building will be constructed by Hayden Lee Corp. The company makes gas water heaters and is negotiating for a large manufacturing plant in Michigan to facilitate distribution throughout the East. The company plans to begin manufacturing circulating gas wall heaters, gas floor furnaces, air conditioning units and water softeners.

California

Collins Radio Co., Los Angeles, started construction of a $500,000 electronic equipment plant in Arcadia, Calif.

California

Tappan Stove Co., Mansfield, O., purchased O'Keefe & Merritt Co., Los Angeles. The Tappan Co. acquired control of the west coast stove firm for $5 million. Officials of both firms said there will be no change in policies, personnel, or management at O'Keefe & Merritt Co.

California

Lear Inc. will produce its aircraft radios on the West Coast. The firm's line of aircraft radios, previously produced only at Lear's Grand Rapids, Mich. plant, are being made at the West Coast plant in West Los Angeles, Calif. Lear's backlog stands at $12 million. The company makes aircraft radios, actuating systems and controls, electric gyros, pumps, and automatic pilots.

Delaware

Diamond Head Screw Co.—screws and bolts—was chartered by the secretary of state's office, Dover, Del. Capital of the firm is listed at $500,000. U. S. Corporation Co., Dover, is serving as the principal office.

Delaware

Brodrene Dahl Corp.—machine shop—filed a charter of incorporation with the secretary of state's office, Dover, Del. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

Delaware

Harloe Industries Inc.—steel—was chartered by the secretary of state's office, Dover, Del. Capital of the firm is listed at $100,000. Prentice-Hall Corporation System, Dover, is serving as the principal office.

Illinois

Mid-States Gummed Paper Co., division of Minnesota Mining & Mfg. Co., St. Paul, plans the early erection of a plant building in Bedford Park, Ill., to cost about $4 million.

Illinois

Flat Metal Mfg. Co., Franklin Park, Ill., will soon award contracts for erection of a factory addition to cost about $135,000. Marx & Lutz, Chicago, are the architects.

Illinois

Clearing Industrial District, Chicago, was awarded the general contract for erection of a factory to cost about $800,000, including equipment, for the manufacture of musical instruments for **Gulbranson Co.,** Melrose Park, Ill. John S. Cromelin, Chicago, is the architect.

Indiana

Dodge Mfg. Corp., Mishawaka, Ind., consolidated operations of its two subsidiaries, Chicago Thrift Co. and Etching Co. of America, in the plant at 1555 N. Sheffield Ave., Chicago. The subsidiaries are merged under the name of Chicago Thrift-Etching Corp., engaged in the manufacturing of etched metal products and coin banks, as well as in plating and anodizing operations under the Alumilite process.

Maryland

Lawrence Co., Brooklyn, Md., producer of forgings, is erecting a small addition to house a second steam hammer. Thomas R. Lawrence is president.

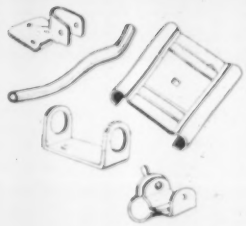
Maryland

Caldwell Casting Co. Inc., Baltimore, engaged in die casting, including high pressure injected molded castings, is tripling its capacity by the installation of new equipment. Vernon Caldwell is president.

Maryland

United Steel of America Inc., Baltimore, maker of roof joints, has leased a building being erected in Arbutus, Md. The new plant will be somewhat larger than the

METAL *Fabricating*



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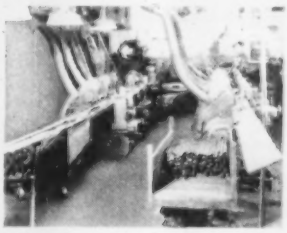

Illustrated

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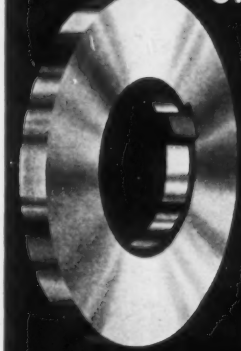

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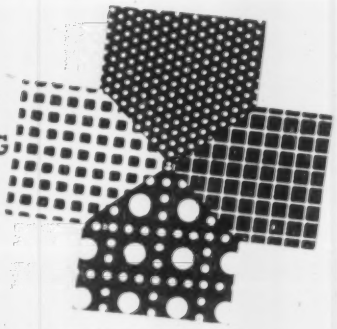

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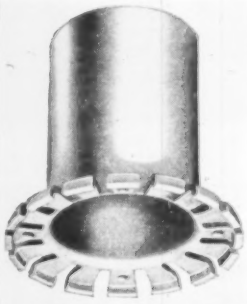

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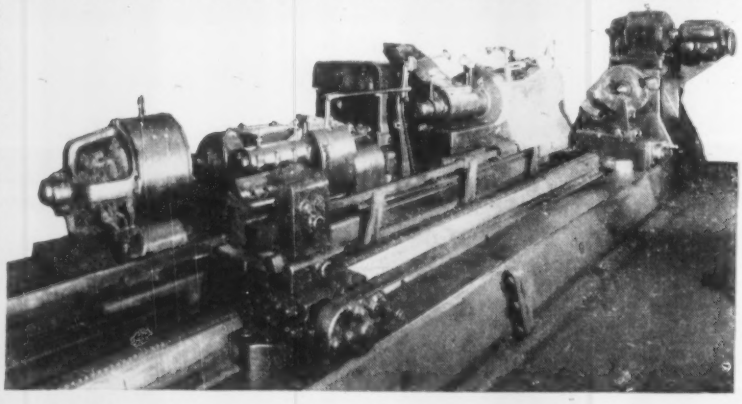

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one this company now occupies and is scheduled for completion in March.

New York

A new $500,000 warehouse will be erected in Buffalo for **Whitehead Metal Products Co. Inc.**, a subsidiary of International Nickel Co. The structure will have a warehousing capacity of 5 million pounds of metal.

New York

Chapman Transmission Corp. and its affiliate, Chapman Thin-Wall Coupling Corp., are moving from Buffalo to Hornell, N. Y., where the firms have leased 72,000 square feet of floor space.

Ohio

Weatherhead Co., Cleveland, appointed 17 industrial distributors who will carry complete but varying stocks of the company's products, tubing and pipe fittings and industrial hose. The new distributors are: H. G. Davis Inc., Boston; Gransden-Hall & Co., Flint, Mich.; Great Lakes Rubber Co., Detroit; Nelson & Storm Tool Supply, Rockford, Ill.; Jennison Co., Fitchburg, Mass.; Plant Equipment Co., Denver; Iron Range Equipment Co., Hibbing, Minn.; Jurgens Co., St. Paul; John B. Astell & Co. Inc., New York; Jarett Compressor & Equipment Inc., Newark, N. J.; F. R. Magill Co., Pittsburgh; Riggs Engineering Co. Inc., Ludlow, Ky.; Vorys Bros. Inc., Columbus, O.; F. D. Haker Co., Milwaukee; Midwestern Rubber Co., Cleveland; W. S. Nott Co., Minneapolis; Shields Rubber, Pittsburgh.

Ohio

Sherwin-Williams Co., Cleveland, is building a $250,000 addition to its Hubbard, O., plant. D. D. Davis Construction Co., general contractor, expects to complete the addition by Mar. 1. It will be used to house lacquering equipment. The present plant makes paint and varnish cans. The company is considering building another addition to house its lithographing department.

Ohio

S. K. Wellman Co., Cleveland, will build a $600,000 plant in Bedford, O. Architect for the plant is the firm of C. B. Rowley Associates, Cleveland.

Ohio

Consolidated Iron-Steel Mfg. Co., Cleveland, purchased Chicago Pneumatic Tool Co.'s former plant at East 49th street and Lakeside avenue, that city. The acquisition was made to facilitate the future expansion of Consolidated's division, Republic Structural Iron Works, for its steel warehouse and heavy steel fabrication business. Consolidated also purchased Ackerman Plastic Molding, Euclid, O. This property will be operated as a division of the parent company and will function as a pilot plant to explore the possibilities of plastics in conjunction with Consolidated's present steel and iron castings service.

Ohio

Westinghouse Electric Corp., Pittsburgh, purchased plant No. 1 of Pharis Tire & Rubber Co., Newark, O. The building will be converted and equipped to manufacture transmission units for the company's automatic washers.

Pennsylvania

A $1.5 million expansion of plant and manufacturing facilities for **Quaker Rubber Corp.**, Philadelphia, a division of H. K. Porter Co. Inc., is under way. About 70 per cent of the expenditure is earmarked for new equipment with the balance going into new buildings.

Pennsylvania

American Flexible Coupling Co., Erie, Pa., manufacturer of couplings for power transmission, appointed H. H. Kumler Co., Houston and Tulsa, Okla., as representative.

Pennsylvania

Organized to specialize in plant layout, warehouse planning, material handling and production control is a consultant management engineering firm, **Gaudreau, Rimbach & Associates**, located in Chicago, New York and Washington, with main offices at 921 Ridge Ave., Pittsburgh. Partners are Armand T. Gaudreau, formerly associated with Stevenson, Jordan & Harrison Inc.; Richard Rimbach, consulting engineer and president, Robinson, Stierheim & Weis Inc.

Pennsylvania

Edgewater Steel Co., Pittsburgh, now is operating Tracy Mfg. Co. as a division. With its plant for the manufacture of kitchen sinks and cabinets located along the Ohio river in Pittsburgh. Tracy will continue to produce the same products.

Washington

United Concrete Pipe Corp., Baldwin Park, Calif., is reported to be considering construction of a $1 million pipe manufacturing plant at Moses Lake, Wash.

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Heald #44 Borematic, complete, NEW 1941

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Fosdick 5', Single pulley drive
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MISCELLANEOUS

Barber Colman #12 Hobbing Machine with 8" longer than standard bed
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Gleason 3" Spiral Gear Generator
Landis 6" x 18" Type "C" Hydraulic Grinder
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Landis 26" x 144" External Grinder
Heald #70A Internal Grinder, new 1941
American 36" x 24' Screw Cutting Engine Lathe, Internal Face Plate Drive, 16' center distance, with 8" raising blocks
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Cincinnati 2-24 Plain Production Mill
Cincinnati 0-8 Plain Horizontal Mill
Lees Bradner #40 Automatic Thread Miller
Gould & Eberhardt #18 H Gear Hobber, FIRST CLASS
Avey #2, 2 spindle Drill Press, NEW 1941
Baker #1 Keyseater, REBUILT, FIRST CLASS
Mitts & Merrill #4 Keyseater
Gray 36 x 36 x 12' Double Housing Planer
Peerless 9 x 9 Hack Saw
Cincinnati 16" Back Geared Shaper
Gould & Eberhardt 20" Back Geared Crank Shaper
Gould & Eberhardt 24" High Duty Back Geared Crank Shaper
Gould & Eberhardt 32" Back Geared Crank Shaper
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